SEQUENCE LISTING

<110> BRIGGS, Kristen
GLANCY, Todd
HEIN, Mitch B.
HIATT, Andrew C.
KARNOUP, Anton S.
ANDERSON, W.H. Kerr
PAREDDY, Dayakar
PETOLINO, Joseph
RUBIN-WILSON, Elizabeth
TAYLOR, Doug
Roberts, Jean L.
The Dow Chemical Company
Dow Agrosciences, LLC
Epicyte Pharmaceutical, Inc.

<120> Plant production of immunoglobulins with reduced fucosylation

<130> 038136-5001-US

<150> US 60/429,385
<151> 2002-11-27

<150> PCT/US03/037905
<151> 2003-11-28

<160> 85

<170> PatentIn version 3.1

<210> 1
<211> 1494
<212> DNA
<213> Herpes simplex virus

<220>
<221> CDS
<222> (1)..(1494)

<220>
<221> misc_feature
<223> HSV Heavy Chain sequence

<400> 1

```
atg gga tgg agc tgg atc ttt ctc ttc ctc ctg tca gga gct gca ggt       48
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                  10                  15

gtc cat tgc cag gtt cag ctc gtg cag tca ggt gct gag gtg aag aag       96
Val His Cys Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            20                  25                  30

cct ggc tcc tcg gtg aag gtc tcc tgc aag gct tct gga ggt tcc ttc      144
Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Phe
        35                  40                  45
```

```
agc tcc tat gct atc aac tgg gtg agg caa gct cct gga caa ggg ctt      192
Ser Ser Tyr Ala Ile Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    50                  55                  60

gag tgg atg gga ggg ctc atg cct atc ttt ggg aca aca aac tac gcg      240
Glu Trp Met Gly Gly Leu Met Pro Ile Phe Gly Thr Thr Asn Tyr Ala
65                  70                  75                  80

cag aag ttc cag gac agg ctc acg att acc gcg gac gta tcc acg agt      288
Gln Lys Phe Gln Asp Arg Leu Thr Ile Thr Ala Asp Val Ser Thr Ser
                85                  90                  95

aca gcc tac atg caa ctg agc ggc ctg aca tat gaa gac acg gcc atg      336
Thr Ala Tyr Met Gln Leu Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met
            100                 105                 110

tat tac tgt gcg aga gtt gcc tac atg ctt gaa cct acc gtc act gca      384
Tyr Tyr Cys Ala Arg Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala
        115                 120                 125

ggt ggt ttg gac gtc tgg ggc caa ggg acc ttg gtc acc gtc tcc tcc      432
Gly Gly Leu Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
    130                 135                 140

gca tcc ccg acc agc ccg aag gtc ttc ccg ctg agc ctc tgt agc acc      480
Ala Ser Pro Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr
145                 150                 155                 160

cag cca gat ggg aac gtg gtc atc gcc tgc ctg gtc cag ggc ttc ttc      528
Gln Pro Asp Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe
                165                 170                 175

cct cag gag cca ctc agt gtg acc tgg agc gaa agc gga cag ggc gtg      576
Pro Gln Glu Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val
            180                 185                 190

acc gcc agg aac ttc cca ccc agc cag gat gcc tcc gga gac ctg tac      624
Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
        195                 200                 205

acc acg tcc agc cag ctg acc ctt ccg gcc aca cag tgc cta gcg ggc      672
Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly
    210                 215                 220

aag tcc gtg aca tgc cac gtg aag cac tac acg aat ccc agc cag gat      720
Lys Ser Val Thr Cys His Val Lys His Tyr Thr Asn Pro Ser Gln Asp
225                 230                 235                 240

gtg act gtg ccc tgc cca gtt ccc tca act cca cct acc cca tct ccc      768
Val Thr Val Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro
                245                 250                 255

tcg act cca cct acc cca tct ccc tca tgc tgc cac ccc agg ctg tca      816
Ser Thr Pro Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser
            260                 265                 270
```

```
ctg cac agg cct gcc ctc gag gac ctg ctc tta ggt tcg gaa gcg aac      864
Leu His Arg Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn
        275                 280                 285

ctc acg tgc aca ctc acc ggc ctg aga gat gcg tca ggt gtc acc ttc      912
Leu Thr Cys Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe
    290                 295                 300

acc tgg acg ccc tca agt ggt aag agc gct gtt caa ggc cca cct gag      960
Thr Trp Thr Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Glu
305                 310                 315                 320

cgt gac ctc tgt ggc tgc tac agc gtg tcc agt gtc ctt ccg ggc tgt     1008
Arg Asp Leu Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys
                325                 330                 335

gcc gag cct tgg aat cat ggg aag acc ttc act tgc act gct gcc tac     1056
Ala Glu Pro Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr
            340                 345                 350

ccc gag agc aag acc ccg cta acc gcc acc ctc tcg aaa tcc ggc aac     1104
Pro Glu Ser Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn
        355                 360                 365

aca ttc cgg ccc gag gtc cac ctg ctg ccg ccg ccg tcg gag gag ctg     1152
Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu Glu Leu
    370                 375                 380

gcc ctg aac gag ctg gtg acg ctg acg tgc ctg gcg cgc ggc ttc agc     1200
Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser
385                 390                 395                 400

ccc aag gac gtg ctg gtt cgc tgg ctg cag ggc tca cag gag ctg cct     1248
Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro
                405                 410                 415

agg gag aag tac ctg act tgg gca tcc cgg cag gag ccc agc caa ggc     1296
Arg Glu Lys Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly
            420                 425                 430

acc acc acc ttc gct gtg acc tcg ata ctg cgc gtg gca gcc gag gac     1344
Thr Thr Thr Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp
        435                 440                 445

tgg aag aag ggt gac acc ttc tcc tgc atg gtg ggc cac gag gcc ctt     1392
Trp Lys Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu
    450                 455                 460

ccg ctg gcc ttc aca cag aag acc atc gac cgc ttg gcg ggt aaa ccc     1440
Pro Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly Lys Pro
465                 470                 475                 480

acc cat gtc aat gtg tct gtt gtc atg gcg gag gtg gac ggc acc tgc     1488
Thr His Val Asn Val Ser Val Val Met Ala Glu Val Asp Gly Thr Cys
                485                 490                 495

tac tga                                                            1494
```

Tyr

<210> 2
<211> 497
<212> PRT
<213> Herpes simplex virus

<400> 2

```
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                  10                  15

Val His Cys Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys
            20                  25                  30

Pro Gly Ser Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Phe
        35                  40                  45

Ser Ser Tyr Ala Ile Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu
    50                  55                  60

Glu Trp Met Gly Gly Leu Met Pro Ile Phe Gly Thr Thr Asn Tyr Ala
65                  70                  75                  80

Gln Lys Phe Gln Asp Arg Leu Thr Ile Thr Ala Asp Val Ser Thr Ser
                85                  90                  95

Thr Ala Tyr Met Gln Leu Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met
            100                 105                 110

Tyr Tyr Cys Ala Arg Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala
        115                 120                 125

Gly Gly Leu Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser
    130                 135                 140

Ala Ser Pro Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr
145                 150                 155                 160

Gln Pro Asp Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe
                165                 170                 175

Pro Gln Glu Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val
            180                 185                 190
```

```
Thr Ala Arg Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr
        195                 200                 205

Thr Thr Ser Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly
    210                 215                 220

Lys Ser Val Thr Cys His Val Lys His Tyr Thr Asn Pro Ser Gln Asp
225                 230                 235                 240

Val Thr Val Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro
                245                 250                 255

Ser Thr Pro Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser
            260                 265                 270

Leu His Arg Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn
        275                 280                 285

Leu Thr Cys Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe
    290                 295                 300

Thr Trp Thr Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Glu
305                 310                 315                 320

Arg Asp Leu Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys
                325                 330                 335

Ala Glu Pro Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr
            340                 345                 350

Pro Glu Ser Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn
        355                 360                 365

Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu Glu Leu
    370                 375                 380

Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser
385                 390                 395                 400

Pro Lys Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro
                405                 410                 415
```

```
Arg Glu Lys Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly
            420                 425                 430

Thr Thr Thr Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp
        435                 440                 445

Trp Lys Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu
    450                 455                 460

Pro Leu Ala Phe Thr Gln Lys Thr Ile Asp Arg Leu Ala Gly Lys Pro
465                 470                 475                 480

Thr His Val Asn Val Ser Val Val Met Ala Glu Val Asp Gly Thr Cys
                485                 490                 495

Tyr
```

<210> 3
<211> 57
<212> DNA
<213> Artificial sequence

<220>
<223> Heavy chain signal peptide

<220>
<221> CDS
<222> (1)..(57)

<400> 3

```
atg gga tgg agc tgg atc ttt ctc ttc ctc ctg tca gga gct gca ggt      48
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                   10                  15

gtc cat tgc                                                        57
Val His Cys
```

<210> 4
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> Heavy chain signal peptide

<400> 4

```
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                   10                  15

Val His Cys
```

<210> 5
<211> 1368
<212> DNA
<213> Artificial sequence

<220>
<223> Mature heavy chain sequence

<220>
<221> CDS
<222> (1)..(1368)

<400> 5

```
cag gtt cag ctc gtg cag tca ggt gct gag gtg aag aag cct ggc tcc       48
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1               5                   10                  15

tcg gtg aag gtc tcc tgc aag gct tct gga ggt tcc ttc agc tcc tat       96
Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Phe Ser Ser Tyr
            20                  25                  30

gct atc aac tgg gtg agg caa gct cct gga caa ggg ctt gag tgg atg      144
Ala Ile Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

gga ggg ctc atg cct atc ttt ggg aca aca aac tac gcg cag aag ttc      192
Gly Gly Leu Met Pro Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe
    50                  55                  60

cag gac agg ctc acg att acc gcg gac gta tcc acg agt aca gcc tac      240
Gln Asp Arg Leu Thr Ile Thr Ala Asp Val Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

atg caa ctg agc ggc ctg aca tat gaa gac acg gcc atg tat tac tgt      288
Met Gln Leu Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95

gcg aga gtt gcc tac atg ctt gaa cct acc gtc act gca ggt ggt ttg      336
Ala Arg Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala Gly Gly Leu
            100                 105                 110

gac gtc tgg ggc caa ggg acc ttg gtc acc gtc tcc tcc gca tcc ccg      384
Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Pro
        115                 120                 125

acc agc ccg aag gtc ttc ccg ctg agc ctc tgt agc acc cag cca gat      432
Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr Gln Pro Asp
    130                 135                 140
```

```
ggg aac gtg gtc atc gcc tgc ctg gtc cag ggc ttc ttc cct cag gag      480
Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe Pro Gln Glu
145                 150                 155                 160

cca ctc agt gtg acc tgg agc gaa agc gga cag ggc gtg acc gcc agg      528
Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val Thr Ala Arg
                165                 170                 175

aac ttc cca ccc agc cag gat gcc tcc gga gac ctg tac acc acg tcc      576
Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr Thr Thr Ser
            180                 185                 190

agc cag ctg acc ctt ccg gcc aca cag tgc cta gcg ggc aag tcc gtg      624
Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly Lys Ser Val
        195                 200                 205

aca tgc cac gtg aag cac tac acg aat ccc agc cag gat gtg act gtg      672
Thr Cys His Val Lys His Tyr Thr Asn Pro Ser Gln Asp Val Thr Val
    210                 215                 220

ccc tgc cca gtt ccc tca act cca cct acc cca tct ccc tcg act cca      720
Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro Ser Thr Pro
225                 230                 235                 240

cct acc cca tct ccc tca tgc tgc cac ccc agg ctg tca ctg cac agg      768
Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser Leu His Arg
                245                 250                 255

cct gcc ctc gag gac ctg ctc tta ggt tcg gaa gcg aac ctc acg tgc      816
Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn Leu Thr Cys
            260                 265                 270

aca ctc acc ggc ctg aga gat gcg tca ggt gtc acc ttc acc tgg acg      864
Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe Thr Trp Thr
        275                 280                 285

ccc tca agt ggt aag agc gct gtt caa ggc cca cct gag cgt gac ctc      912
Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Glu Arg Asp Leu
    290                 295                 300

tgt ggc tgc tac agc gtg tcc agt gtc ctt ccg ggc tgt gcc gag cct      960
Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys Ala Glu Pro
305                 310                 315                 320

tgg aat cat ggg aag acc ttc act tgc act gct gcc tac ccc gag agc     1008
Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr Pro Glu Ser
                325                 330                 335

aag acc ccg cta acc gcc acc ctc tcg aaa tcc ggc aac aca ttc cgg     1056
Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn Thr Phe Arg
            340                 345                 350

ccc gag gtc cac ctg ctg ccg ccg ccg tcg gag gag ctg gcc ctg aac     1104
Pro Glu Val His Leu Leu Pro Pro Pro Ser Glu Glu Leu Ala Leu Asn
        355                 360                 365

gag ctg gtg acg ctg acg tgc ctg gcg cgc ggc ttc agc ccc aag gac     1152
```

```
Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser Pro Lys Asp
    370                 375                 380

gtg ctg gtt cgc tgg ctg cag ggc tca cag gag ctg cct agg gag aag     1200
Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro Arg Glu Lys
385                 390                 395                 400

tac ctg act tgg gca tcc cgg cag gag ccc agc caa ggc acc acc acc     1248
Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly Thr Thr Thr
                405                 410                 415

ttc gct gtg acc tcg ata ctg cgc gtg gca gcc gag gac tgg aag aag     1296
Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp Trp Lys Lys
            420                 425                 430

ggt gac acc ttc tcc tgc atg gtg ggc cac gag gcc ctt ccg ctg gcc     1344
Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu Pro Leu Ala
        435                 440                 445

ttc aca cag aag acc atc gac cgc                                     1368
Phe Thr Gln Lys Thr Ile Asp Arg
    450                 455
```

<210> 6
<211> 456
<212> PRT
<213> Artificial sequence

<220>
<223> Mature heavy chain sequence

<400> 6

```
Gln Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1               5                   10                  15

Ser Val Lys Val Ser Cys Lys Ala Ser Gly Gly Ser Phe Ser Ser Tyr
            20                  25                  30

Ala Ile Asn Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met
        35                  40                  45

Gly Gly Leu Met Pro Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe
    50                  55                  60

Gln Asp Arg Leu Thr Ile Thr Ala Asp Val Ser Thr Ser Thr Ala Tyr
65                  70                  75                  80

Met Gln Leu Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met Tyr Tyr Cys
                85                  90                  95
```

```
Ala Arg Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala Gly Gly Leu
            100                 105                 110

Asp Val Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Pro
        115                 120                 125

Thr Ser Pro Lys Val Phe Pro Leu Ser Leu Cys Ser Thr Gln Pro Asp
    130                 135                 140

Gly Asn Val Val Ile Ala Cys Leu Val Gln Gly Phe Phe Pro Gln Glu
145                 150                 155                 160

Pro Leu Ser Val Thr Trp Ser Glu Ser Gly Gln Gly Val Thr Ala Arg
                165                 170                 175

Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr Thr Thr Ser
            180                 185                 190

Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly Lys Ser Val
        195                 200                 205

Thr Cys His Val Lys His Tyr Thr Asn Pro Ser Gln Asp Val Thr Val
    210                 215                 220

Pro Cys Pro Val Pro Ser Thr Pro Pro Thr Pro Ser Pro Ser Thr Pro
225                 230                 235                 240

Pro Thr Pro Ser Pro Ser Cys Cys His Pro Arg Leu Ser Leu His Arg
                245                 250                 255

Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu Ala Asn Leu Thr Cys
            260                 265                 270

Thr Leu Thr Gly Leu Arg Asp Ala Ser Gly Val Thr Phe Thr Trp Thr
        275                 280                 285

Pro Ser Ser Gly Lys Ser Ala Val Gln Gly Pro Pro Glu Arg Asp Leu
    290                 295                 300

Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys Ala Glu Pro
305                 310                 315                 320
```

```
Trp Asn His Gly Lys Thr Phe Thr Cys Thr Ala Ala Tyr Pro Glu Ser
                325                 330                 335

Lys Thr Pro Leu Thr Ala Thr Leu Ser Lys Ser Gly Asn Thr Phe Arg
            340                 345                 350

Pro Glu Val His Leu Leu Pro Pro Ser Glu Glu Leu Ala Leu Asn
        355                 360                 365

Glu Leu Val Thr Leu Thr Cys Leu Ala Arg Gly Phe Ser Pro Lys Asp
    370                 375                 380

Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro Arg Glu Lys
385                 390                 395                 400

Tyr Leu Thr Trp Ala Ser Arg Gln Glu Pro Ser Gln Gly Thr Thr Thr
                405                 410                 415

Phe Ala Val Thr Ser Ile Leu Arg Val Ala Ala Glu Asp Trp Lys Lys
            420                 425                 430

Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu Pro Leu Ala
        435                 440                 445

Phe Thr Gln Lys Thr Ile Asp Arg
    450                 455
```

<210> 7
<211> 69
<212> DNA
<213> Artificial sequence

<220>
<223> heavy chain tailpiece

<220>
<221> CDS
<222> (1)..(69)

<400> 7

```
ttg gcg ggt aaa ccc acc cat gtc aat gtg tct gtt gtc atg gcg gag       48
Leu Ala Gly Lys Pro Thr His Val Asn Val Ser Val Val Met Ala Glu
1               5                   10                  15

gtg gac ggc acc tgc tac tga                                         69
Val Asp Gly Thr Cys Tyr
            20
```

<210> 8
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> heavy chain tailpiece

<400> 8

```
Leu Ala Gly Lys Pro Thr His Val Asn Val Ser Val Val Met Ala Glu
1               5                   10                  15

Val Asp Gly Thr Cys Tyr
            20
```

<210> 9
<211> 702
<212> DNA
<213> Herpes simplex virus

<220>
<221> CDS
<222> (1)..(702)

<220>
<221> misc_feature
<223> HSV light chain sequence

<400> 9

```
atg gga tgg tcc tgg atc ttt ctc ttc ctt ctg tca gga gct gca ggt       48
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                   10                  15

gtc cac tgc gag atc gtg ctc acg cag tct cca ggc acc ctg tct ttg       96
Val His Cys Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu
            20                  25                  30

tcg cca ggg gaa cgt gcc acc ctc tcc tgc cgg gcc agt cag tcc gtt      144
Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val
        35                  40                  45

tcc agc gcg tac ctt gcc tgg tac cag cag aag cct ggc caa gct ccc      192
Ser Ser Ala Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro
    50                  55                  60

agg ctc ctc atc tat ggt gcg tcc agc agg gct act ggc att cca gac      240
Arg Leu Leu Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp
65                  70                  75                  80

cgc ttc tca ggc agt ggg tct ggg aca gac ttc acg ctc acc att agc      288
Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
                85                  90                  95
```

```
agg ctg gaa cct gag gat ttt gca gtg tac tac tgt cag cag tat ggt      336
Arg Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly
            100                 105                 110

cgc tca ccc acg ttc ggc cag ggg acc aag gtg gag atc aag cgc act      384
Arg Ser Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
        115                 120                 125

gtg gct gca ccg tcg gtc ttc ata ttc ccg cca tcc gat gag cag ctg      432
Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu
    130                 135                 140

aag tct ggc act gcc tct gtt gtg tgc ctg ctg aat aac ttc tat ccg      480
Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro
145                 150                 155                 160

aga gag gcg aag gta cag tgg aag gtg gat aac gcc ctc caa tcg ggt      528
Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly
                165                 170                 175

aac tcc caa gag tcc gtt aca gag cag gac agc aag gac agc acc tac      576
Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr
            180                 185                 190

agc ctc agc aac acc ttg acg ctg agc aaa gcg gac tac gag aaa cac      624
Ser Leu Ser Asn Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His
        195                 200                 205

aag gtc tac gcc tgc gaa gtc acc cat caa ggc ctg cgc tcg ccc gtc      672
Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Arg Ser Pro Val
    210                 215                 220

aca aag agc ttc aac cgg gga gag tgt tga                              702
Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230
```

<210> 10
<211> 233
<212> PRT
<213> Herpes simplex virus

<400> 10

```
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1               5                   10                  15

Val His Cys Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu
            20                  25                  30

Ser Pro Gly Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val
        35                  40                  45
```

```
Ser Ser Ala Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro
    50                  55                  60

Arg Leu Leu Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp
65                  70                  75                  80

Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser
                85                  90                  95

Arg Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly
            100                 105                 110

Arg Ser Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr
        115                 120                 125

Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu
    130                 135                 140

Lys Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro
145                 150                 155                 160

Arg Glu Ala Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly
                165                 170                 175

Asn Ser Gln Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr
            180                 185                 190

Ser Leu Ser Asn Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His
        195                 200                 205

Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Arg Ser Pro Val
    210                 215                 220

Thr Lys Ser Phe Asn Arg Gly Glu Cys
225                 230
```

<210> 11
<211> 57
<212> DNA
<213> Artificial sequence

<220>
<223> Light chain signal peptide

<220>

<221> CDS
<222> (1)..(57)

<400> 11
atg gga tgg tcc tgg atc ttt ctc ttc ctt ctg tca gga gct gca ggt 48
Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1 5 10 15

gtc cac tgc 57
Val His Cys

<210> 12
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> Light chain signal peptide

<400> 12

Met Gly Trp Ser Trp Ile Phe Leu Phe Leu Leu Ser Gly Ala Ala Gly
1 5 10 15

Val His Cys

<210> 13
<211> 642
<212> DNA
<213> Artificial sequence

<220>
<223> Mature light chain sequence

<220>
<221> CDS
<222> (1)..(642)

<400> 13
gag atc gtg ctc acg cag tct cca ggc acc ctg tct ttg tcg cca ggg 48
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

gaa cgt gcc acc ctc tcc tgc cgg gcc agt cag tcc gtt tcc agc gcg 96
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ala
20 25 30

tac ctt gcc tgg tac cag cag aag cct ggc caa gct ccc agg ctc ctc 144
Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
35 40 45

atc tat ggt gcg tcc agc agg gct act ggc att cca gac cgc ttc tca 192

```
Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60

ggc agt ggg tct ggg aca gac ttc acg ctc acc att agc agg ctg gaa      240
Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65                  70                  75                  80

cct gag gat ttt gca gtg tac tac tgt cag cag tat ggt cgc tca ccc      288
Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Arg Ser Pro
                85                  90                  95

acg ttc ggc cag ggg acc aag gtg gag atc aag cgc act gtg gct gca      336
Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

ccg tcg gtc ttc ata ttc ccg cca tcc gat gag cag ctg aag tct ggc      384
Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

act gcc tct gtt gtg tgc ctg ctg aat aac ttc tat ccg aga gag gcg      432
Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

aag gta cag tgg aag gtg gat aac gcc ctc caa tcg ggt aac tcc caa      480
Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

gag tcc gtt aca gag cag gac agc aag gac agc acc tac agc ctc agc      528
Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

aac acc ttg acg ctg agc aaa gcg gac tac gag aaa cac aag gtc tac      576
Asn Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

gcc tgc gaa gtc acc cat caa ggc ctg cgc tcg ccc gtc aca aag agc      624
Ala Cys Glu Val Thr His Gln Gly Leu Arg Ser Pro Val Thr Lys Ser
        195                 200                 205

ttc aac cgg gga gag tgt                                             642
Phe Asn Arg Gly Glu Cys
    210
```

<210> 14
<211> 214
<212> PRT
<213> Artificial sequence

<220>
<223> Mature light chain sequence

<400> 14

```
Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1               5                   10                  15
```

```
Glu Arg Ala Thr Leu Ser Cys Arg Ala Ser Gln Ser Val Ser Ser Ala
            20                  25                  30

Tyr Leu Ala Trp Tyr Gln Gln Lys Pro Gly Gln Ala Pro Arg Leu Leu
        35                  40                  45

Ile Tyr Gly Ala Ser Ser Arg Ala Thr Gly Ile Pro Asp Arg Phe Ser
    50                  55                  60

Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg Leu Glu
65                  70                  75                  80

Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Arg Ser Pro
                85                  90                  95

Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys Arg Thr Val Ala Ala
            100                 105                 110

Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln Leu Lys Ser Gly
        115                 120                 125

Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg Glu Ala
    130                 135                 140

Lys Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln
145                 150                 155                 160

Glu Ser Val Thr Glu Gln Asp Ser Lys Asp Ser Thr Tyr Ser Leu Ser
                165                 170                 175

Asn Thr Leu Thr Leu Ser Lys Ala Asp Tyr Glu Lys His Lys Val Tyr
            180                 185                 190

Ala Cys Glu Val Thr His Gln Gly Leu Arg Ser Pro Val Thr Lys Ser
        195                 200                 205

Phe Asn Arg Gly Glu Cys
    210
```

<210> 15
<211> 9144
<212> DNA
<213> Artificial sequence

<220>
<223> pDAB635 (ubiH) sequence

<400> 15
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt acaccggtgt gatcatgggc 420

cgcgattaaa aatcccaatt atatttggtc taatttagtt tggtattgag taaaacaaat 480

tcgaaccaaa ccaaaatata aatatatagt ttttatatat atgcctttaa gacttttat 540

agaattttct ttaaaaaata tctagaaata tttgcgactc ttctggcatg taatatttcg 600

ttaaatatga agtgctccat ttttattaac tttaaataat tggttgtacg atcactttct 660

tatcaagtgt tactaaaatg cgtcaatctc tttgttcttc catattcata tgtcaaaatc 720

tatcaaaatt cttatatatc tttttcgaat ttgaagtgaa atttcgataa tttaaaatta 780

aatagaacat atcattattt aggtatcata ttgattttta tacttaatta ctaaatttgg 840

ttaactttga aagtgtacat caacgaaaaa ttagtcaaac gactaaaata aataaatatc 900

atgtgttatt aagaaaattc tcctataaga atattttaat agatcatatg tttgtaaaaa 960

aaattaattt ttactaacac atatatttac ttatcaaaaa tttgacaaag taagattaaa 1020

ataatattca tctaacaaaa aaaaaaccag aaaatgctga aaacccggca aaaccgaacc 1080

aatccaaacc gatatagttg gtttggtttg attttgatat aaaccgaacc aactcggtcc 1140

atttgcaccc ctaatcataa tagctttaat atttcaagat attattaagt taacgttgtc 1200

aatatcctgg aaattttgca aaatgaatca agcctatatg gctgtaatat gaatttaaaa 1260

gcagctcgat gtggtggtaa tatgtaattt acttgattct aaaaaaatat cccaagtatt 1320

aataatttct gctaggaaga aggttagcta cgatttacag caaagccaga atacaaagaa 1380

ccataaagtg attgaagctc gaaatatacg aaggaacaaa tatttttaaa aaaatacgca 1440

atgacttgga acaaaagaaa gtgatatatt ttttgttctt aaacaagcat cccctctaaa 1500

gaatggcagt tttcctttgc atgtaactat tatgctccct tcgttacaaa aattttggac 1560

tactattggg aacttcttct gaaaatagtg gccaccgctt aattaacacc ggtggcccgg 1620

gcaagcggcc gcattcccgg gaagctaggc caccgtggcc cgcctgcagg ggaagcttgc 1680

atgcctgcag atccccgggg atcctctaga gtcgacctgc agtgcagcgt gacccggtcg 1740

tgcccctctc tagagataat gagcattgca tgtctaagtt ataaaaaatt accacatatt 1800

ttttttgtca cacttgtttg aagtgcagtt tatctatctt tatacatata tttaaacttt 1860

aatctacgaa taatataatc tatagtacta caataatatc agtgttttag agaatcatat 1920

aaatgaacag ttagacatgg tctaaaggac aattgagtat tttgacaaca ggactctaca 1980

gttttatctt tttagtgtgc atgtgttctc ctttttttt gcaaatagct tcacctatat 2040

aatacttcat ccattttatt agtacatcca tttagggttt agggttaatg gtttttatag 2100

actaattttt ttagtacatc tattttattc tattttagcc tctaaattaa gaaaactaaa 2160

actctatttt agtttttta tttaataatt tagatataaa atagaataaa ataaagtgac 2220

taaaaattaa acaaatacc tttaagaaat taaaaaaact aaggaaacat ttttcttgtt 2280

tcgagtagat aatgccagcc tgttaaacgc cgtcgacgag tctaacggac accaaccagc 2340

gaaccagcag cgtcgcgtcg ggccaagcga agcagacggc acggcatctc tgtcgctgcc 2400

tctggacccc tctcgagagt tccgctccac cgttggactt gctccgctgt cggcatccag 2460

aaattgcgtg gcggagcggc agacgtgagc cggcacggca ggcggcctcc tcctcctctc 2520

acggcacggc agctacgggg gattcctttc ccaccgctcc ttcgctttcc cttcctcgcc 2580

cgccgtaata aatagacacc ccctccacac cctctttccc caacctcgtg ttgttcggag 2640

cgcacacaca cacaaccaga tctcccccaa atccacccgt cggcacctcc gcttcaaggt 2700

acgccgctcg tcctcccccc ccccccctct ctaccttctc tagatcggcg ttccggtcca 2760

tgcatggtta gggcccggta gttctacttc tgttcatgtt tgtgttagat ccgtgtttgt 2820

gttagatccg tgctgctagc gttcgtacac ggatgcgacc tgtacgtcag acacgttctg 2880

attgctaact tgccagtgtt tctctttggg gaatcctggg atggctctag ccgttccgca 2940

gacgggatcg atttcatgat ttttttgtt tcgttgcata gggtttggtt tgccctttc 3000

ctttatttca atatatgccg tgcacttgtt tgtcgggtca tcttttcatg ctttttttg 3060

tcttggttgt gatgatgtgg tctggttggg cggtcgttct agatcggagt agaattctgt 3120

ttcaaactac ctggtggatt tattaatttt ggatctgtat gtgtgtgcca tacatattca 3180

tagttacgaa ttgaagatga tggatggaaa tatcgatcta ggataggtat acatgttgat 3240

gcgggtttta ctgatgcata tacagagatg ctttttgttc gcttggttgt gatgatgtgg 3300

tgtggttggg cggtcgttca ttcgttctag atcggagtag aatactgttt caaactacct 3360

ggtgtattta ttaattttgg aactgtatgt gtgtgtcata catcttcata gttacgagtt 3420

taagatggat ggaaatatcg atctaggata ggtatacatg ttgatgtggg ttttactgat 3480

gcatatacat gatggcatat gcagcatcta ttcatatgct ctaaccttga gtacctatct 3540

attataataa acaagtatgt tttataatta ttttgatctt gatatacttg gatgatggca 3600

tatgcagcag ctatatgtgg attttttag ccctgccttc atacgctatt tatttgcttg 3660

gtactgtttc ttttgtcgat gctcaccctg ttgtttggtg ttacttctgc agggtacccc 3720

cggggtcgac catggccaac aagcacctga gcctctccct cttcctcgtg ctcctcggcc 3780

tctccgcctc cctcgccagc ggccaggttc agctcgtgca gtcaggggct gaggtgaaga 3840

agcctgggtc ctcggtgaag gtctcctgca aggcttctgg aggttccttc agcagctatg 3900

ctatcaactg ggtgcgacag gcccctggac aagggcttga gtggatggga gggctcatgc 3960

ctatctttgg gacaacaaac tacgcacaga agttccagga cagactcacg attaccgcgg 4020

acgtatccac gagtacagcc tacatgcagc tgagcggcct gacatatgaa gacacggcca 4080

tgtattactg tgcgagagtt gcctatatgt tggaacctac cgtcactgca gggggtttgg 4140

acgtctgggg caaagggacc acggtcaccg tctccccagc atccccgacc agccccaagg 4200

tcttcccgct gagcctctgc agcacccagc cagatgggaa cgtggtcatc gcctgcctgg 4260

tccagggctt cttcccccag gagccactca gtgtgacctg gagcgaaagc ggacagggcg 4320

tgaccgccag aaacttccca cccagccagg atgcctccgg ggacctgtac accacgagca 4380

gccagctgac cctgccggcc acacagtgcc tagccggcaa gtccgtgaca tgccacgtga 4440

agcactacac gaatcccagc caggatgtga ctgtgccctg cccagttccc tcaactccac 4500

ctaccccatc tccctcaact ccacctaccc catctccctc atgctgccac ccccgactgt 4560

cactgcaccg accggccctc gaggacctgc tcttaggttc agaagcgaac ctcacgtgca 4620

cactgaccgg cctgagagat gcctcaggtg tcaccttcac ctggacgccc tcaagtggga 4680

agagcgctgt tcaaggacca cctgagcgtg acctctgtgg ctgctacagc gtgtccagtg 4740

tcctgccggg ctgtgccgag ccttggaatc atgggaagac cttcacttgc actgctgcct 4800

accccgagtc caagaccccg ctaaccgcca ccctctcaaa atccggaaac acattccggc 4860

ccgaggtcca cctgctgccg ccgccgtcgg aggagctggc cctgaacgag ctggtgacgc 4920

tgacgtgcct ggcacgtggc ttcagcccca aggacgtgct ggttcgctgg ctgcaggggt 4980

cacaggagct gccccgcgag aagtacctga cttgggcatc ccggcaggag cccagccagg 5040

gcaccaccac cttcgctgtg accagcatac tgcgcgtggc agccgaggac tggaagaagg 5100

gggacacctt ctcctgcatg gtgggccacg aggccctgcc gctggccttc acacagaaga 5160

ccatcgaccg cttggcgggt aaacccaccc atgtcaatgt gtctgttgtc atggcggagg 5220

tggacggcac ctgctactga gttaaactga gggcactgaa gtcgcttgat gtgctgaatt 5280

gtttgtgatg ttggtggcgt attttgttta aataagtaag catggctgtg attttatcat 5340

atgatcgatc tttggggttt tatttaacac attgtaaaat gtgtatctat taataactca 5400

atgtataaga tgtgttcatt cttcggttgc catagatctg cttatttgac ctgtgatgtt 5460

ttgactccaa aaaccaaaat cacaactcaa taaactcatg gaatatgtcc acctgtttct 5520

tgaagagttc atctaccatt ccagttggca tttatcagtg ttgcagcggc gctgtgcttt 5580

gtaacataac aattgttacg gcatatatcc aacggccggc ctaggccacg gtggccagat 5640

ccactagttc tagagcggcc gcttaattaa atttaaatgt ttaaactagg cctcctgcag 5700

ggtttaaact tgccgtggcc tattttcaga agaagttccc aatagtagtc caaaattttt 5760

gtaacgaagg gagcataata gttacatgca aaggaaaact gccattcttt agaggggatg 5820

cttgtttaag aacaaaaaat atatcacttt cttttgttcc aagtcattgc gtatttttt 5880

aaaaatattt gttccttcgt atatttcgag cttcaatcac tttatggttc tttgtattct 5940

ggctttgctg taaatcgtag ctaaccttct tcctagcaga aattattaat acttgggata 6000

ttttttttaga atcaagtaaa ttacatatta ccaccacatc gagctgcttt taaattcata 6060

ttacagccat ataggcttga ttcattttgc aaaatttcca ggatattgac aacgttaact 6120

taataatatc ttgaaatatt aaagctatta tgattagggg tgcaaatgga ccgagttggt 6180

tcggtttata tcaaaatcaa accaaaccaa ctatatcggt ttggattggt tcggttttgc 6240

cgggttttca gcattttctg gtttttttt tgttagatga atattatttt aatcttactt 6300

tgtcaaattt ttgataagta aatatatgtg ttagtaaaaa ttaatttttt ttacaaacat 6360

atgatctatt aaaatattct tataggagaa ttttcttaat aacacatgat atttatttat 6420

tttagtcgtt tgactaattt ttcgttgatg tacactttca aagttaacca aatttagtaa 6480

ttaagtataa aaatcaatat gatacctaaa taatgatatg ttctatttaa ttttaaatta 6540

tcgaaatttc acttcaaatt cgaaaaagat atataagaat tttgatagat tttgacatat 6600

gaatatggaa gaacaaagag attgacgcat tttagtaaca cttgataaga aagtgatcgt 6660

acaaccaatt atttaaagtt aataaaaatg gagcacttca tatttaacga aatattacat 6720

gccagaagag tcgcaaatat ttctagatat tttttaaaga aaattctata aaaagtctta 6780

aaggcatata tataaaaact atatatttat attttggttt ggttcgaatt tgttttactc 6840

aataccaaac taaattagac caaatataat tgggattttt aatcgcggcc cactagtcac 6900

cggtgtgctt ggcgtaatca tggtcatagc tgtttcctgt gtgaaattgt tatccgctca 6960

caattccaca caacatacga gccggaagca taaagtgtaa agcctggggt gcctaatgag 7020

tgagctaact cacattaatt gcgttgcgct cactgcccgc tttccagtcg ggaaacctgt 7080

cgtgccagct gcattaatga atcggccaac gcgcggggag aggcggtttg cgtattgggc 7140

gctcttccgc ttcctcgctc actgactcgc tgcgctcggt cgttcggctg cggcgagcgg 7200

tatcagctca ctcaaaggcg gtaatacggt tatccacaga atcaggggat aacgcaggaa 7260

agaacatgtg agcaaaaggc agcaaaagg ccaggaaccg taaaaaggcc gcgttgctgg 7320

cgtttttcca taggctccgc ccccctgacg agcatcacaa aaatcgacgc tcaagtcaga 7380

ggtggcgaaa cccgacagga ctataaagat accaggcgtt tccccctgga agctccctcg 7440

tgcgctctcc tgttccgacc ctgccgctta ccggatacct gtccgccttt ctcccttcgg 7500

gaagcgtggc gctttctcat agctcacgct gtaggtatct cagttcggtg taggtcgttc 7560

gctccaagct gggctgtgtg cacgaacccc ccgttcagcc cgaccgctgc gccttatccg 7620

gtaactatcg tcttgagtcc aacccggtaa gacacgactt atcgccactg gcagcagcca 7680

ctggtaacag gattagcaga gcgaggtatg taggcggtgc tacagagttc ttgaagtggt 7740

ggcctaacta cggctacact agaaggacag tatttggtat ctgcgctctg ctgaagccag 7800

ttaccttcgg aaaaagagtt ggtagctctt gatccggcaa acaaaccacc gctggtagcg 7860

gtggtttttt tgtttgcaag cagcagatta cgcgcagaaa aaaaggatct caagaagatc 7920

ctttgatctt ttctacgggg tctgacgctc agtggaacga aaactcacgt taagggattt 7980

tggtcatgag attatcaaaa aggatcttca cctagatcct tttaaattaa aaatgaagtt 8040

ttaaatcaat ctaaagtata tatgagtaaa cttggtctga cagttaccaa tgcttaatca 8100

gtgaggcacc tatctcagcg atctgtctat ttcgttcatc catagttgcc tgactccccg 8160

tcgtgtagat aactacgata cgggagggct taccatctgg ccccagtgct gcaatgatac 8220

cgcgagaccc acgctcaccg gctccagatt tatcagcaat aaaccagcca gccggaaggg 8280

ccgagcgcag aagtggtcct gcaactttat ccgcctccat ccagtctatt aattgttgcc 8340

gggaagctag agtaagtagt tcgccagtta atagtttgcg caacgttgtt gccattgcta 8400

caggcatcgt ggtgtcacgc tcgtcgtttg gtatggcttc attcagctcc ggttcccaac 8460

gatcaaggcg agttacatga tcccccatgt tgtgcaaaaa agcggttagc tccttcggtc 8520

ctccgatcgt tgtcagaagt aagttggccg cagtgttatc actcatggtt atggcagcac 8580

tgcataattc tcttactgtc atgccatccg taagatgctt ttctgtgact ggtgagtact 8640

caaccaagtc attctgagaa tagtgtatgc ggcgaccgag ttgctcttgc ccggcgtcaa 8700

tacgggataa taccgcgcca catagcagaa ctttaaaagt gctcatcatt ggaaaacgtt 8760

cttcggggcg aaaactctca aggatcttac cgctgttgag atccagttcg atgtaaccca 8820

ctcgtgcacc caactgatct tcagcatctt ttactttcac cagcgtttct gggtgagcaa 8880

aaacaggaag gcaaaatgcc gcaaaaaagg gaataagggc gacacggaaa tgttgaatac 8940

tcatactctt cctttttcaa tattattgaa gcatttatca gggttattgt ctcatgagcg 9000

gatacatatt tgaatgtatt tagaaaaata aacaaatagg ggttccgcgc acatttcccc 9060

gaaaagtgcc acctgacgtc taagaaacca ttattatcat gacattaacc tataaaaata 9120

ggcgtatcac gaggcccttt cgtc 9144

<210> 16
<211> 8352
<212> DNA
<213> Artificial sequence

<220>
<223> pDAB636 (ubiL) sequence

<400> 16
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt acaccggtgt gatcatgggc 420

cgcgattaaa aatcccaatt atatttggtc taatttagtt tggtattgag taaaacaaat 480

tcgaaccaaa ccaaaatata aatatatagt ttttatatat atgcctttaa gacttttttat 540

agaattttct ttaaaaaata tctagaaata tttgcgactc ttctggcatg taatatttcg 600

ttaaatatga agtgctccat ttttattaac tttaaataat tggttgtacg atcactttct 660

tatcaagtgt tactaaaatg cgtcaatctc tttgttcttc catattcata tgtcaaaatc 720

tatcaaaatt cttatatatc tttttcgaat ttgaagtgaa atttcgataa tttaaaatta 780

aatagaacat atcattattt aggtatcata ttgattttta tacttaatta ctaaatttgg 840

ttaactttga aagtgtacat caacgaaaaa ttagtcaaac gactaaaata aataaatatc 900

atgtgttatt aagaaaattc tcctataaga atattttaat agatcatatg tttgtaaaaa 960

aaattaattt ttactaacac atatatttac ttatcaaaaa tttgacaaag taagattaaa 1020

ataatattca tctaacaaaa aaaaaaccag aaaatgctga aaacccggca aaaccgaacc 1080

aatccaaacc gatatagttg gtttggtttg attttgatat aaaccgaacc aactcggtcc 1140

atttgcaccc ctaatcataa tagctttaat atttcaagat attattaagt taacgttgtc 1200

aatatcctgg aaattttgca aaatgaatca agcctatatg gctgtaatat gaatttaaaa 1260

gcagctcgat gtggtggtaa tatgtaattt acttgattct aaaaaaatat cccaagtatt 1320

aataatttct gctaggaaga aggttagcta cgatttacag caaagccaga atacaaagaa 1380

ccataaagtg attgaagctc gaaatatacg aaggaacaaa tatttttaaa aaaatacgca 1440

atgacttgga acaaaagaaa gtgatatatt ttttgttctt aaacaagcat cccctctaaa 1500

gaatggcagt tttcctttgc atgtaactat tatgctccct tcgttacaaa aattttggac 1560

tactattggg aacttcttct gaaaatagtg gccaccgctt aattaacacc ggtggcccgg 1620

gcaagcggcc gcattcccgg gaagctaggc caccgtggcc cgcctgcagg ggaagcttgc 1680

atgcctgcag atccccgggg atcctctaga gtcgacctgc agtgcagcgt gacccggtcg 1740

tgcccctctc tagagataat gagcattgca tgtctaagtt ataaaaaatt accacatatt 1800

ttttttgtca cacttgtttg aagtgcagtt tatctatctt tatacatata tttaaacttt 1860

aatctacgaa taatataatc tatagtacta caataatatc agtgttttag agaatcatat 1920

aaatgaacag ttagacatgg tctaaaggac aattgagtat tttgacaaca ggactctaca 1980

gttttatctt tttagtgtgc atgtgttctc ctttttttttt gcaaatagct tcacctatat 2040

aatacttcat ccattttatt agtacatcca tttagggttt agggttaatg gtttttatag 2100

actaattttt ttagtacatc tattttattc tattttagcc tctaaattaa gaaaactaaa 2160

actctatttt agtttttttta tttaataatt tagatataaa atagaataaa ataaagtgac 2220

taaaaattaa acaaataccc tttaagaaat taaaaaaact aaggaaacat ttttcttgtt 2280

tcgagtagat aatgccagcc tgttaaacgc cgtcgacgag tctaacggac accaaccagc 2340

gaaccagcag cgtcgcgtcg ggccaagcga agcagacggc acggcatctc tgtcgctgcc 2400

tctggacccc tctcgagagt tccgctccac cgttggactt gctccgctgt cggcatccag 2460

aaattgcgtg gcggagcggc agacgtgagc cggcacggca ggcggcctcc tcctcctctc 2520

acggcacggc agctacgggg gattcctttc ccaccgctcc ttcgctttcc cttcctcgcc 2580

cgccgtaata aatagacacc ccctccacac cctctttccc caacctcgtg ttgttcggag 2640

cgcacacaca cacaaccaga tctcccccaa atccacccgt cggcacctcc gcttcaaggt 2700

acgccgctcg tcctcccccc ccccccctct ctaccttctc tagatcggcg ttccggtcca 2760

tgcatggtta gggcccggta gttctacttc tgttcatgtt tgtgttagat ccgtgtttgt 2820

gttagatccg tgctgctagc gttcgtacac ggatgcgacc tgtacgtcag acacgttctg 2880

attgctaact tgccagtgtt tctctttggg gaatcctggg atggctctag ccgttccgca 2940

gacgggatcg atttcatgat ttttttttgtt tcgttgcata gggtttggtt tgccctttc 3000

ctttatttca atatatgccg tgcacttgtt tgtcgggtca tcttttcatg ctttttttg 3060

tcttggttgt gatgatgtgg tctggttggg cggtcgttct agatcggagt agaattctgt 3120

ttcaaactac ctggtggatt tattaatttt ggatctgtat gtgtgtgcca tacatattca 3180

tagttacgaa ttgaagatga tggatggaaa tatcgatcta ggataggtat acatgttgat 3240

gcgggtttta ctgatgcata tacagagatg ctttttgttc gcttggttgt gatgatgtgg 3300

tgtggttggg cggtcgttca ttcgttctag atcggagtag aatactgttt caaactacct 3360

ggtgtattta ttaattttgg aactgtatgt gtgtgtcata catcttcata gttacgagtt 3420

taagatggat ggaaatatcg atctaggata ggtatacatg ttgatgtggg ttttactgat 3480

gcatatacat gatggcatat gcagcatcta ttcatatgct ctaaccttga gtacctatct 3540

attataataa acaagtatgt tttataatta ttttgatctt gatatacttg gatgatggca 3600

tatgcagcag ctatatgtgg attttttttag ccctgccttc atacgctatt tatttgcttg 3660

gtactgtttc ttttgtcgat gctcaccctg ttgtttggtg ttacttctgc agggtacccc 3720

cggggtcgac catggccaac aagcacctga gcctctccct cttcctcgtg ctcctcggcc 3780

tctccgcctc cctcgccagc ggcgaaattg tgctcacgca gtctccaggc accctgtctt 3840

tgtctccagg ggaaaaagcc accctctcct gcagggccag tcagagtgtt agtagcgcct 3900

acttagcctg gtaccagcag aaacctggcc aggctcccag gctcctcatc tatggtgcat 3960

ccagcagggc cactggcatc ccagacaggt tcagtggcag tgggtctggg acagacttca 4020

ctctcaccat cagcagactg gaacctgaag attttgcagt gtattactgt cagcagtatg 4080

gtaggtcacc cactttcggc ggagggacca aggtggagat caaacgaact gtggctgcac 4140

catctgtctt catcttcccg ccatctgatg agcagttgaa atctggaact gcctctgttg 4200

tgtgcctgct gaataacttc tatcccagag aggccaaagt acagtggaag gtggataacg 4260

ccctccaatc gggtaactcc caggagagtg tcacagagca ggacagcaag gacagcacct 4320

acagcctcag caacaccctg acgctgagca aagcagacta cgagaaacac aaagtctacg 4380

cctgcgaagt cacccatcag ggcctgagat cgcccgtcac aaagagcttc aacaggggag 4440

agtgttgagt taaactgagg gcactgaagt cgcttgatgt gctgaattgt ttgtgatgtt 4500

ggtggcgtat tttgtttaaa taagtaagca tggctgtgat tttatcatat gatcgatctt 4560

tggggtttta tttaacacat tgtaaaatgt gtatctatta ataactcaat gtataagatg 4620

tgttcattct tcggttgcca tagatctgct tatttgacct gtgatgtttt gactccaaaa 4680

accaaaatca caactcaata aactcatgga atatgtccac ctgtttcttg aagagttcat 4740

ctaccattcc agttggcatt tatcagtgtt gcagcggcgc tgtgctttgt aacataacaa 4800

ttgttacggc atatatccaa cggccggcct aggccacggt ggccagatcc actagttcta 4860

gagcggccgc ttaattaaat ttaaatgttt aaactaggcc tcctgcaggg tttaaacttg 4920

ccgtggccta ttttcagaag aagttcccaa tagtagtcca aaatttttgt aacgaaggga 4980

gcataatagt tacatgcaaa ggaaaactgc cattctttag aggggatgct tgtttaagaa 5040

caaaaaatat atcactttct tttgttccaa gtcattgcgt atttttttaa aaatatttgt 5100

tccttcgtat atttcgagct tcaatcactt tatggttctt tgtattctgg ctttgctgta 5160

aatcgtagct aaccttcttc ctagcagaaa ttattaatac ttgggatatt tttttagaat 5220

caagtaaatt acatattacc accacatcga gctgctttta aattcatatt acagccatat 5280

aggcttgatt cattttgcaa aatttccagg atattgacaa cgttaactta ataatatctt 5340

gaaatattaa agctattatg attaggggtg caaatggacc gagttggttc ggtttatatc 5400

aaaatcaaac caaaccaact atatcggttt ggattggttc ggttttgccg ggttttcagc 5460

attttctggt ttttttttttg ttagatgaat attattttaa tcttactttg tcaaattttt 5520

gataagtaaa tatatgtgtt agtaaaaatt aatttttttt acaaacatat gatctattaa 5580

aatattctta taggagaatt ttcttaataa cacatgatat ttatttattt tagtcgtttg 5640

actaattttt cgttgatgta cactttcaaa gttaaccaaa tttagtaatt aagtataaaa 5700

atcaatatga tacctaaata atgatatgtt ctatttaatt ttaaattatc gaaatttcac 5760

ttcaaattcg aaaaagatat ataagaattt tgatagattt tgacatatga atatggaaga 5820

acaaagagat tgacgcattt tagtaacact tgataagaaa gtgatcgtac aaccaattat 5880

ttaaagttaa taaaaatgga gcacttcata tttaacgaaa tattacatgc cagaagagtc 5940

gcaaatattt ctagatattt tttaaagaaa attctataaa aagtcttaaa ggcatatata 6000

taaaaactat atatttatat tttggtttgg ttcgaatttg ttttactcaa taccaaacta 6060

aattagacca aatataattg ggatttttaa tcgcggccca ctagtcaccg gtgtgcttgg 6120

cgtaatcatg gtcatagctg tttcctgtgt gaaattgtta tccgctcaca attccacaca 6180

acatacgagc cggaagcata aagtgtaaag cctggggtgc ctaatgagtg agctaactca 6240

cattaattgc gttgcgctca ctgcccgctt tccagtcggg aaacctgtcg tgccagctgc 6300

attaatgaat cggccaacgc gcggggagag gcggtttgcg tattgggcgc tcttccgctt 6360

cctcgctcac tgactcgctg cgctcggtcg ttcggctgcg gcgagcggta tcagctcact 6420

caaaggcggt aatacggtta tccacagaat caggggataa cgcaggaaag aacatgtgag 6480

caaaaggcca gcaaaaggcc aggaaccgta aaaaggccgc gttgctggcg tttttccata 6540

ggctccgccc ccctgacgag catcacaaaa atcgacgctc aagtcagagg tggcgaaacc 6600

cgacaggact ataaagatac caggcgtttc cccctggaag ctccctcgtg cgctctcctg 6660

ttccgaccct gccgcttacc ggatacctgt ccgcctttct cccttcggga agcgtggcgc 6720

tttctcatag ctcacgctgt aggtatctca gttcggtgta ggtcgttcgc tccaagctgg 6780

gctgtgtgca cgaacccccc gttcagcccg accgctgcgc cttatccggt aactatcgtc 6840

ttgagtccaa cccggtaaga cacgacttat cgccactggc agcagccact ggtaacagga 6900

ttagcagagc gaggtatgta ggcggtgcta cagagttctt gaagtggtgg cctaactacg 6960

gctacactag aaggacagta tttggtatct gcgctctgct gaagccagtt accttcggaa 7020

aaagagttgg tagctcttga tccggcaaac aaaccaccgc tggtagcggt ggtttttttg 7080

tttgcaagca gcagattacg cgcagaaaaa aaggatctca agaagatcct ttgatctttt 7140

ctacggggtc tgacgctcag tggaacgaaa actcacgtta agggattttg gtcatgagat 7200

tatcaaaaag gatcttcacc tagatccttt taaattaaaa atgaagtttt aaatcaatct 7260

aaagtatata tgagtaaact tggtctgaca gttaccaatg cttaatcagt gaggcaccta 7320

tctcagcgat ctgtctattt cgttcatcca tagttgcctg actccccgtc gtgtagataa 7380

ctacgatacg ggagggctta ccatctggcc ccagtgctgc aatgataccg cgagacccac 7440

gctcaccggc tccagattta tcagcaataa accagccagc cggaagggcc gagcgcagaa 7500

gtggtcctgc aactttatcc gcctccatcc agtctattaa ttgttgccgg gaagctagag 7560

taagtagttc gccagttaat agtttgcgca acgttgttgc cattgctaca ggcatcgtgg 7620

tgtcacgctc gtcgtttggt atggcttcat tcagctccgg ttcccaacga tcaaggcgag 7680

ttacatgatc ccccatgttg tgcaaaaaag cggttagctc cttcggtcct ccgatcgttg 7740

tcagaagtaa gttggccgca gtgttatcac tcatggttat ggcagcactg cataattctc 7800

ttactgtcat gccatccgta agatgctttt ctgtgactgg tgagtactca accaagtcat 7860

tctgagaata gtgtatgcgg cgaccgagtt gctcttgccc ggcgtcaata cgggataata 7920

ccgcgccaca tagcagaact ttaaaagtgc tcatcattgg aaaacgttct tcggggcgaa 7980

aactctcaag gatcttaccg ctgttgagat ccagttcgat gtaacccact cgtgcaccca 8040

actgatcttc agcatctttt actttcacca gcgtttctgg gtgagcaaaa acaggaaggc 8100

aaaatgccgc aaaaaaggga ataagggcga cacggaaatg ttgaatactc atactcttcc 8160

tttttcaata ttattgaagc atttatcagg gttattgtct catgagcgga tacatatttg 8220

aatgtattta gaaaaataaa caaatagggg ttccgcgcac atttccccga aaagtgccac 8280

ctgacgtcta agaaaccatt attatcatga cattaaccta taaaaatagg cgtatcacga 8340

ggccctttcg tc 8352

<210> 17
<211> 12380
<212> DNA
<213> Artificial sequence

<220>
<223> pDAB637 (ubi H+L) sequence

<400> 17
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt acaccggtgt gatcatgggc 420

cgcgattaaa aatcccaatt atatttggtc taatttagtt tggtattgag taaaacaaat 480

tcgaaccaaa ccaaaatata aatatatagt ttttatatat atgcctttaa gacttttttat 540

agaattttct ttaaaaaata tctagaaata tttgcgactc ttctggcatg taatatttcg 600

ttaaatatga agtgctccat ttttattaac tttaaataat tggttgtacg atcactttct 660

tatcaagtgt tactaaaatg cgtcaatctc tttgttcttc catattcata tgtcaaaatc 720

tatcaaaatt cttatatatc tttttcgaat ttgaagtgaa atttcgataa tttaaaatta 780

aatagaacat atcattattt aggtatcata ttgattttta tacttaatta ctaaatttgg 840

ttaactttga aagtgtacat caacgaaaaa ttagtcaaac gactaaaata aataaatatc 900

atgtgttatt aagaaaattc tcctataaga atattttaat agatcatatg tttgtaaaaa 960

aaattaattt ttactaacac atatatttac ttatcaaaaa tttgacaaag taagattaaa 1020

ataatattca tctaacaaaa aaaaaaccag aaaatgctga aaacccggca aaaccgaacc 1080

aatccaaacc gatatagttg gtttggtttg attttgatat aaaccgaacc aactcggtcc 1140

atttgcaccc ctaatcataa tagctttaat atttcaagat attattaagt taacgttgtc 1200

aatatcctgg aaattttgca aaatgaatca agcctatatg gctgtaatat gaatttaaaa 1260

gcagctcgat gtggtggtaa tatgtaattt acttgattct aaaaaaatat cccaagtatt 1320

aataatttct gctaggaaga aggttagcta cgatttacag caaagccaga atacaaagaa 1380

ccataaagtg attgaagctc gaaatatacg aaggaacaaa tatttttaaa aaaatacgca 1440

atgacttgga acaaaagaaa gtgatatatt ttttgttctt aaacaagcat cccctctaaa 1500

gaatggcagt tttcctttgc atgtaactat tatgctccct tcgttacaaa aattttggac 1560

tactattggg aacttcttct gaaaatagtg gccaccgctt aattaacacc ggtggcccgg 1620

ccgcattccc gggaagctag gccaccgtgg cccgcctgca ggggaagctt gcatgcctgc 1680

agatccccgg ggatcctcta gagtcgacct gcagtgcagc gtgacccggt cgtgcccctc 1740

tctagagata atgagcattg catgtctaag ttataaaaaa ttaccacata tttttttgt 1800

cacacttgtt tgaagtgcag tttatctatc tttatacata tatttaaact ttaatctacg 1860

aataatataa tctatagtac tacaataata tcagtgtttt agagaatcat ataaatgaac 1920

agttagacat ggtctaaagg acaattgagt attttgacaa caggactcta cagttttatc 1980

tttttagtgt gcatgtgttc tccttttttt ttgcaaatag cttcacctat ataatacttc 2040

atccatttta ttagtacatc catttagggt ttagggttaa tggtttttat agactaattt 2100

ttttagtaca tctattttat tctattttag cctctaaatt aagaaaacta aaactctatt 2160

ttagtttttt tatttaataa tttagatata aaatagaata aaataaagtg actaaaaatt 2220

aaacaaatac cctttaagaa attaaaaaaa ctaaggaaac atttttcttg tttcgagtag 2280

ataatgccag cctgttaaac gccgtcgacg agtctaacgg acaccaacca gcgaaccagc 2340

agcgtcgcgt cgggccaagc gaagcagacg gcacggcatc tctgtcgctg cctctggacc 2400

cctctcgaga gttccgctcc accgttggac ttgctccgct gtcggcatcc agaaattgcg 2460

tggcggagcg gcagacgtga gccggcacgg caggcggcct cctcctcctc tcacggcacg 2520

gcagctacgg gggattcctt tcccaccgct ccttcgcttt cccttcctcg cccgccgtaa 2580

taaatagaca ccccctccac accctctttc cccaacctcg tgttgttcgg agcgcacaca 2640

cacacaacca gatctccccc aaatccaccc gtcggcacct ccgcttcaag gtacgccgct 2700

cgtcctcccc ccccccccct ctctaccttc tctagatcgg cgttccggtc catgcatggt 2760

tagggcccgg tagttctact tctgttcatg tttgtgttag atccgtgttt gtgttagatc 2820

cgtgctgcta gcgttcgtac acggatgcga cctgtacgtc agacacgttc tgattgctaa 2880

cttgccagtg tttctctttg gggaatcctg ggatggctct agccgttccg cagacgggat 2940

cgatttcatg attttttttg tttcgttgca tagggtttgg tttgcccttt tcctttattt 3000

caatatatgc cgtgcacttg tttgtcgggt catcttttca tgctttttt tgtcttggtt 3060

gtgatgatgt ggtctggttg ggcggtcgtt ctagatcgga gtagaattct gtttcaaact 3120

acctggtgga tttattaatt ttggatctgt atgtgtgtgc catacatatt catagttacg 3180

aattgaagat gatggatgga aatatcgatc taggataggt atacatgttg atgcgggttt 3240

tactgatgca tatacagaga tgctttttgt tcgcttggtt gtgatgatgt ggtgtggttg 3300

ggcggtcgtt cattcgttct agatcggagt agaatactgt ttcaaactac ctggtgtatt 3360

tattaatttt ggaactgtat gtgtgtgtca tacatcttca tagttacgag tttaagatgg 3420

atggaaatat cgatctagga taggtataca tgttgatgtg ggttttactg atgcatatac 3480

atgatggcat atgcagcatc tattcatatg ctctaacctt gagtacctat ctattataat 3540

aaacaagtat gttttataat tattttgatc ttgatatact tggatgatgg catatgcagc 3600

agctatatgt ggatttttt agccctgcct tcatacgcta tttatttgct tggtactgtt 3660

tcttttgtcg atgctcaccc tgttgtttgg tgttacttct gcagggtacc cccggggtcg 3720

accatggcca acaagcacct gagcctctcc ctcttcctcg tgctcctcgg cctctccgcc 3780

tccctcgcca gcggccaggt tcagctcgtg cagtcagggg ctgaggtgaa gaagcctggg 3840

tcctcggtga aggtctcctg caaggcttct ggaggttcct tcagcagcta tgctatcaac 3900

tgggtgcgac aggcccctgg acaagggctt gagtggatgg gagggctcat gcctatcttt 3960

gggacaacaa actacgcaca gaagttccag gacagactca cgattaccgc ggacgtatcc 4020

acgagtacag cctacatgca gctgagcggc ctgacatatg aagacacggc catgtattac 4080

tgtgcgagag ttgcctatat gttggaacct accgtcactg caggggggttt ggacgtctgg 4140

ggcaaaggga ccacggtcac cgtctcccca gcatccccga ccagccccaa ggtcttcccg 4200

ctgagcctct gcagcaccca gccagatggg aacgtggtca tcgcctgcct ggtccagggc 4260

ttcttccccc aggagccact cagtgtgacc tggagcgaaa gcggacaggg cgtgaccgcc 4320

agaaacttcc cacccagcca ggatgcctcc ggggacctgt acaccacgag cagccagctg 4380

accctgccgg ccacacagtg cctagccggc aagtccgtga catgccacgt gaagcactac 4440

acgaatccca gccaggatgt gactgtgccc tgcccagttc cctcaactcc acctacccca 4500

tctccctcaa ctccacctac cccatctccc tcatgctgcc acccccgact gtcactgcac 4560

cgaccggccc tcgaggacct gctcttaggt tcagaagcga acctcacgtg cacactgacc 4620

ggcctgagag atgcctcagg tgtcaccttc acctggacgc cctcaagtgg gaagagcgct 4680

gttcaaggac cacctgagcg tgacctctgt ggctgctaca gcgtgtccag tgtcctgccg 4740

ggctgtgccg agccttggaa tcatgggaag accttcactt gcactgctgc ctaccccgag 4800

tccaagaccc cgctaaccgc caccctctca aaatccggaa acacattccg gcccgaggtc 4860

cacctgctgc cgccgccgtc ggaggagctg gccctgaacg agctggtgac gctgacgtgc 4920

ctggcacgtg gcttcagccc caaggacgtg ctggttcgct ggctgcaggg gtcacaggag 4980

ctgccccgcg agaagtacct gacttgggca tcccggcagg agcccagcca gggcaccacc 5040

accttcgctg tgaccagcat actgcgcgtg gcagccgagg actggaagaa gggggacacc 5100

ttctcctgca tggtgggcca cgaggccctg ccgctggcct tcacacagaa gaccatcgac 5160

cgcttggcgg gtaaacccac ccatgtcaat gtgtctgttg tcatggcgga ggtggacggc 5220

acctgctact gagttaaact gagggcactg aagtcgcttg atgtgctgaa ttgtttgtga 5280

tgttggtggc gtattttgtt taaataagta agcatggctg tgattttatc atatgatcga 5340

tctttggggt tttatttaac acattgtaaa atgtgtatct attaataact caatgtataa 5400

gatgtgttca ttcttcggtt gccatagatc tgcttatttg acctgtgatg ttttgactcc 5460

aaaaaccaaa atcacaactc aataaactca tggaatatgt ccacctgttt cttgaagagt 5520

tcatctacca ttccagttgg catttatcag tgttgcagcg gcgctgtgct ttgtaacata 5580

acaattgtta cggcatatat ccaacggccg gcctaggcca cggtggccag atccactagt 5640

tctagagcgg ccgcgggcaa attcccggga agctaggcca ccgtggcccg cctgcagggg 5700

aagcttgcat gcctgcagat ccccggggat cctctagagt cgacctgcag tgcagcgtga 5760

cccggtcgtg cccctctcta gagataatga gcattgcatg tctaagttat aaaaaattac 5820

cacatatttt ttttgtcaca cttgtttgaa gtgcagttta tctatcttta tacatatatt 5880

taaactttaa tctacgaata atataatcta tagtactaca ataatatcag tgttttagag 5940

aatcatataa atgaacagtt agacatggtc taaaggacaa ttgagtattt tgacaacagg 6000

actctacagt tttatctttt tagtgtgcat gtgttctcct tttttttgc aaatagcttc 6060

acctatataa tacttcatcc attttattag tacatccatt tagggtttag ggttaatggt 6120

ttttatagac taatttttt agtacatcta ttttattcta ttttagcctc taaattaaga 6180

aaactaaaac tctattttag ttttttatt taataattta gatataaaat agaataaaat 6240

aaagtgacta aaaattaaac aaataccctt taagaaatta aaaaaactaa ggaaacattt 6300

ttcttgtttc gagtagataa tgccagcctg ttaaacgccg tcgacgagtc taacggacac 6360

caaccagcga accagcagcg tcgcgtcggg ccaagcgaag cagacggcac ggcatctctg 6420

tcgctgcctc tggacccctc tcgagagttc cgctccaccg ttggacttgc tccgctgtcg 6480

gcatccagaa attgcgtggc ggagcggcag acgtgagccg gcacggcagg cggcctcctc 6540

ctcctctcac ggcacggcag ctacggggga ttcctttccc accgctcctt cgctttccct 6600

tcctcgcccg ccgtaataaa tagacacccc ctccacaccc tctttcccca acctcgtgtt 6660

gttcggagcg cacacacaca caaccagatc tcccccaaat ccacccgtcg gcacctccgc 6720

ttcaaggtac gccgctcgtc ctcccccccc ccccctctct accttctcta gatcggcgtt 6780

ccggtccatg catggttagg gcccggtagt tctacttctg ttcatgtttg tgttagatcc 6840

gtgtttgtgt tagatccgtg ctgctagcgt tcgtacacgg atgcgacctg tacgtcagac 6900

acgttctgat tgctaacttg ccagtgtttc tctttgggga atcctgggat ggctctagcc 6960

gttccgcaga cgggatcgat ttcatgattt tttttgtttc gttgcatagg gtttggtttg 7020

ccctttttcct ttatttcaat atatgccgtg cacttgtttg tcgggtcatc ttttcatgct 7080

ttttttttgtc ttggttgtga tgatgtggtc tggttgggcg gtcgttctag atcggagtag 7140

aattctgttt caaactacct ggtggattta ttaattttgg atctgtatgt gtgtgccata 7200

catattcata gttacgaatt gaagatgatg gatggaaata tcgatctagg ataggtatac 7260

atgttgatgc gggttttact gatgcatata cagagatgct ttttgttcgc ttggttgtga 7320

tgatgtggtg tggttgggcg gtcgttcatt cgttctagat cggagtagaa tactgtttca 7380

aactacctgg tgtatttatt aattttggaa ctgtatgtgt gtgtcataca tcttcatagt 7440

tacgagttta agatggatgg aaatatcgat ctaggatagg tatacatgtt gatgtgggtt 7500

ttactgatgc atatacatga tggcatatgc agcatctatt catatgctct aaccttgagt 7560

acctatctat tataataaac aagtatgttt tataattatt ttgatcttga tatacttgga 7620

tgatggcata tgcagcagct atatgtggat ttttttagcc ctgccttcat acgctattta 7680

tttgcttggt actgtttctt ttgtcgatgc tcaccctgtt gtttggtgtt acttctgcag 7740

ggtacccccg gggtcgacca tggccaacaa gcacctgagc ctctccctct tcctcgtgct 7800

cctcggcctc tccgcctccc tcgccagcgg cgaaattgtg ctcacgcagt ctccaggcac 7860

cctgtctttg tctccagggg aaaaagccac cctctcctgc agggccagtc agagtgttag 7920

tagcgcctac ttagcctggt accagcagaa acctggccag gctcccaggc tcctcatcta 7980

tggtgcatcc agcagggcca ctggcatccc agacaggttc agtggcagtg ggtctgggac 8040

agacttcact ctcaccatca gcagactgga acctgaagat tttgcagtgt attactgtca 8100

gcagtatggt aggtcaccca ctttcggcgg agggaccaag gtggagatca aacgaactgt 8160

ggctgcacca tctgtcttca tcttcccgcc atctgatgag cagttgaaat ctggaactgc 8220

ctctgttgtg tgcctgctga ataacttcta tcccagagag gccaaagtac agtggaaggt 8280

ggataacgcc ctccaatcgg gtaactccca ggagagtgtc acagagcagg acagcaagga 8340

cagcacctac agcctcagca acaccctgac gctgagcaaa gcagactacg agaaacacaa 8400

agtctacgcc tgcgaagtca cccatcaggg cctgagatcg cccgtcacaa agagcttcaa 8460

caggggagag tgttgagtta aactgagggc actgaagtcg cttgatgtgc tgaattgttt 8520

gtgatgttgg tggcgtattt tgtttaaata agtaagcatg gctgtgattt tatcatatga 8580

tcgatctttg gggttttatt taacacattg taaaatgtgt atctattaat aactcaatgt 8640

ataagatgtg ttcattcttc ggttgccata gatctgctta tttgacctgt gatgttttga 8700

ctccaaaaac caaaatcaca actcaataaa ctcatggaat atgtccacct gtttcttgaa 8760

gagttcatct accattccag ttggcattta tcagtgttgc agcggcgctg tgctttgtaa 8820

cataacaatt gttacggcat atatccaacg gccggcctag gccacggtgg ccagatccac 8880

tagttctaga gcggccgctt aattaaattt aaatgtttaa actaggcctc ctgcagggtt 8940

taaacttgcc gtggcctatt ttcagaagaa gttcccaata gtagtccaaa atttttgtaa 9000

cgaagggagc ataatagtta catgcaaagg aaaactgcca ttctttagag gggatgcttg 9060

tttaagaaca aaaaatatat cactttcttt tgttccaagt cattgcgtat ttttttaaaa 9120

atatttgttc cttcgtatat ttcgagcttc aatcacttta tggttctttg tattctggct 9180

ttgctgtaaa tcgtagctaa ccttcttcct agcagaaatt attaatactt gggatatttt 9240

tttagaatca agtaaattac atattaccac cacatcgagc tgcttttaaa ttcatattac 9300

agccatatag gcttgattca ttttgcaaaa tttccaggat attgacaacg ttaacttaat 9360

aatatcttga aatattaaag ctattatgat taggggtgca aatggaccga gttggttcgg 9420

tttatatcaa aatcaaacca aaccaactat atcggtttgg attggttcgg ttttgccggg 9480

ttttcagcat tttctggttt tttttttgtt agatgaatat tattttaatc ttactttgtc 9540

aaatttttga taagtaaata tatgtgttag taaaaattaa tttttttttac aaacatatga 9600

tctattaaaa tattcttata ggagaatttt cttaataaca catgatattt atttatttta 9660

gtcgtttgac taatttttcg ttgatgtaca ctttcaaagt taaccaaatt tagtaattaa 9720

gtataaaaat caatatgata cctaaataat gatatgttct atttaatttt aaattatcga 9780

aatttcactt caaattcgaa aaagatatat aagaattttg atagattttg acatatgaat 9840

atggaagaac aaagagattg acgcatttta gtaacacttg ataagaaagt gatcgtacaa 9900

ccaattattt aaagttaata aaaatggagc acttcatatt taacgaaata ttacatgcca 9960

gaagagtcgc aaatatttct agatattttt taaagaaaat tctataaaaa gtcttaaagg 10020

catatatata aaaactatat atttatattt tggtttggtt cgaatttgtt ttactcaata 10080

ccaaactaaa ttagaccaaa tataattggg atttttaatc gcggcccact agtcaccggt 10140

gtgcttggcg taatcatggt catagctgtt tcctgtgtga aattgttatc cgctcacaat 10200

tccacacaac atacgagccg gaagcataaa gtgtaaagcc tggggtgcct aatgagtgag 10260

ctaactcaca ttaattgcgt tgcgctcact gcccgctttc cagtcgggaa acctgtcgtg 10320

ccagctgcat taatgaatcg gccaacgcgc ggggagaggc ggtttgcgta ttgggcgctc 10380

ttccgcttcc tcgctcactg actcgctgcg ctcggtcgtt cggctgcggc gagcggtatc 10440

agctcactca aaggcggtaa tacggttatc cacagaatca ggggataacg caggaaagaa 10500

catgtgagca aaaggccagc aaaaggccag gaaccgtaaa aaggccgcgt tgctggcgtt 10560

tttccatagg ctccgccccc ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg 10620

gcgaaacccg acaggactat aaagatacca ggcgtttccc cctggaagct ccctcgtgcg 10680

ctctcctgtt ccgaccctgc cgcttaccgg atacctgtcc gcctttctcc cttcgggaag 10740

cgtggcgctt tctcatagct cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc 10800

caagctgggc tgtgtgcacg aacccccccgt tcagcccgac cgctgcgcct tatccggtaa 10860

ctatcgtctt gagtccaacc cggtaagaca cgacttatcg ccactggcag cagccactgg 10920

taacaggatt agcagagcga ggtatgtagg cggtgctaca gagttcttga agtggtggcc 10980

taactacggc tacactagaa ggacagtatt tggtatctgc gctctgctga agccagttac 11040

cttcggaaaa agagttggta gctcttgatc cggcaaacaa accaccgctg gtagcggtgg 11100

ttttttgtt tgcaagcagc agattacgcg cagaaaaaaa ggatctcaag aagatccttt 11160

gatcttttct acggggtctg acgctcagtg gaacgaaaac tcacgttaag ggattttggt 11220

catgagatta tcaaaaagga tcttcaccta gatcctttta aattaaaaat gaagttttaa 11280

atcaatctaa agtatatatg agtaaacttg gtctgacagt taccaatgct taatcagtga 11340

ggcacctatc tcagcgatct gtctatttcg ttcatccata gttgcctgac tccccgtcgt 11400

gtagataact acgatacggg agggcttacc atctggcccc agtgctgcaa tgataccgcg 11460

agacccacgc tcaccggctc cagatttatc agcaataaac cagccagccg gaagggccga 11520

gcgcagaagt ggtcctgcaa ctttatccgc ctccatccag tctattaatt gttgccggga 11580

agctagagta agtagttcgc cagttaatag tttgcgcaac gttgttgcca ttgctacagg 11640

catcgtggtg tcacgctcgt cgtttggtat ggcttcattc agctccggtt cccaacgatc 11700

aaggcgagtt acatgatccc ccatgttgtg caaaaaagcg gttagctcct tcggtcctcc 11760

gatcgttgtc agaagtaagt tggccgcagt gttatcactc atggttatgg cagcactgca 11820

taattctctt actgtcatgc catccgtaag atgcttttct gtgactggtg agtactcaac 11880

caagtcattc tgagaatagt gtatgcggcg accgagttgc tcttgcccgg cgtcaatacg 11940

ggataatacc gcgccacata gcagaacttt aaaagtgctc atcattggaa aacgttcttc 12000

ggggcgaaaa ctctcaagga tcttaccgct gttgagatcc agttcgatgt aacccactcg 12060

tgcacccaac tgatcttcag catcttttac tttcaccagc gtttctgggt gagcaaaaac 12120

aggaaggcaa aatgccgcaa aaaagggaat aagggcgaca cggaaatgtt gaatactcat 12180

actcttcctt tttcaatatt attgaagcat ttatcagggt tattgtctca tgagcggata 12240

catatttgaa tgtatttaga aaaataaaca aatagggggtt ccgcgcacat ttccccgaaa 12300

agtgccacct gacgtctaag aaaccattat tatcatgaca ttaacctata aaaataggcg 12360

tatcacgagg ccctttcgtc 12380

<210> 18
<211> 16
<212> PRT
<213> Artificial sequence

<220>
<223> CDR3 region of heavy chain FabHSV 8-CDR3

<400> 18

Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala Gly Gly Leu Asp Val
1 5 10 15

<210> 19
<211> 122
<212> PRT
<213> Artificial sequence

<220>
<223> Heavy chain V region FabSHV 8

<400> 19

Leu Glu Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser Ser Val Lys
1 5 10 15

Val Ser Cys Lys Ala Ser Gly Gly Ser Phe Ser Ser Tyr Ala Ile Asn
20 25 30

Trp Val Arg Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Gly Leu
35 40 45

Met Pro Ile Phe Gly Thr Thr Asn Tyr Ala Gln Lys Phe Gln Asp Arg
50 55 60

Leu Thr Ile Thr Ala Asp Val Ser Thr Ser Thr Ala Tyr Met Gln Leu
65 70 75 80

Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met Tyr Tyr Cys Ala Arg Val
85 90 95

Ala Tyr Met Leu Glu Pro Thr Val Thr Ala Gly Gly Leu Asp Val Trp
100 105 110

Gly Gln Gly Thr Thr Val Thr Val Ala Ser
115 120

<210> 20

<211> 18
<212> PRT
<213> Artificial sequence

<220>
<223> tryptic+ Asp-N peptide of N269

<400> 20

Asp Leu Leu Leu Gly Ser Glu Ala Asn Leu Thr Cys Thr Leu Thr Gly
1 5 10 15

Leu Arg

<210> 21
<211> 18
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T1

<400> 21

Glu Ile Val Leu Thr Gln Ser Pro Gly Thr Leu Ser Leu Ser Pro Gly
1 5 10 15

Glu Arg

<210> 22
<211> 6
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T2

<400> 22

Ala Thr Leu Ser Cys Arg
1 5

<210> 23
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T3

<400> 23

Ala Ser Gln Ser Val Ser Ser Ala Tyr Leu Ala Trp Tyr Gln Gln Lys
1 5 10 15

Pro Gly Gln Ala Pro Arg
20

<210> 24
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T4

<400> 24

Leu Leu Ile Tyr Gly Ala Ser Ser Arg
1 5

<210> 25
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T5

<400> 25

Ala Thr Gly Ile Pro Asp Arg
1 5

<210> 26
<211> 16
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T6

<400> 26

Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg
1 5 10 15

<210> 27
<211> 16
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T7

<400> 27

Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Arg
1 5 10 15

<210> 28
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T8

<400> 28

Ser Pro Thr Phe Gly Gln Gly Thr Lys
1 5

<210> 29
<211> 18
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T11

<400> 29

Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu Gln
1 5 10 15

Leu Lys

<210> 30
<211> 16
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T12

<400> 30

Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg
1 5 10 15

<210> 31
<211> 4

<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T14

<400> 31

Val Gln Trp Lys
1

<210> 32
<211> 20
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T15

<400> 32

Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu Ser Val Thr Glu
1 5 10 15

Gln Asp Ser Lys
20

<210> 33
<211> 14
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T16

<400> 33

Asp Ser Thr Tyr Ser Leu Ser Asn Thr Leu Thr Leu Ser Lys
1 5 10

<210> 34
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T17

<400> 34

Ala Asp Tyr Glu Lys
1 5

<210> 35
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T19

<400> 35

Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Arg
1 5 10

<210> 36
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T20

<400> 36

Ser Pro Val Thr Lys
1 5

<210> 37
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T21

<400> 37

Ser Phe Asn Arg
1

<210> 38
<211> 23
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T5-6

<400> 38

Ala Thr Gly Ile Pro Asp Arg Phe Ser Gly Ser Gly Ser Gly Thr Asp
1 5 10 15

Phe Thr Leu Thr Ile Ser Arg
20

<210> 39
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T6-7

<400> 39

Phe Ser Gly Ser Gly Ser Gly Thr Asp Phe Thr Leu Thr Ile Ser Arg
1 5 10 15

Leu Glu Pro Glu Asp Phe Ala Val Tyr Tyr Cys Gln Gln Tyr Gly Arg
20 25 30

<210> 40
<211> 13
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T8-9

<400> 40

Ser Pro Thr Phe Gly Gln Gly Thr Lys Val Glu Ile Lys
1 5 10

<210> 41
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T10-11

<400> 41

Arg Thr Val Ala Ala Pro Ser Val Phe Ile Phe Pro Pro Ser Asp Glu
1 5 10 15

Gln Leu Lys

<210> 42
<211> 19
<212> PRT

<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T12-13

<400> 42

Ser Gly Thr Ala Ser Val Val Cys Leu Leu Asn Asn Phe Tyr Pro Arg
1 5 10 15

Glu Ala Lys

<210> 43
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T13-14

<400> 43

Glu Ala Lys Val Gln Trp Lys
1 5

<210> 44
<211> 24
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T14-15

<400> 44

Val Gln Trp Lys Val Asp Asn Ala Leu Gln Ser Gly Asn Ser Gln Glu
1 5 10 15

Ser Val Thr Glu Gln Asp Ser Lys
20

<210> 45
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T17-18

<400> 45

Ala Asp Tyr Glu Lys His Lys
1 5

<210> 46
<211> 14
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T18-19

<400> 46

His Lys Val Tyr Ala Cys Glu Val Thr His Gln Gly Leu Arg
1 5 10

<210> 47
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T20-21

<400> 47

Ser Pro Val Thr Lys Ser Phe Asn Arg
1 5

<210> 48
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment L-T21-22

<400> 48

Ser Phe Asn Arg Gly Glu Cys
1 5

<210> 49
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T1

<400> 49

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys

1 5 10

<210> 50
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T2

<400> 50

Lys Pro Gly Ser Ser Val Lys
1 5

<210> 51
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T4

<400> 51

Ala Ser Gly Gly Ser Phe Ser Ser Tyr Ala Ile Asn Trp Val Arg
1 5 10 15

<210> 52
<211> 25
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T5

<400> 52

Gln Ala Pro Gly Gln Gly Leu Glu Trp Met Gly Gly Leu Met Pro Ile
1 5 10 15

Phe Gly Thr Thr Asn Tyr Ala Gln Lys
20 25

<210> 53
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T6

<400> 53

Phe Gln Asp Arg
1

<210> 54
<211> 31
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T7

<400> 54

Leu Thr Ile Thr Ala Asp Val Ser Thr Ser Thr Ala Tyr Met Gln Leu
1 5 10 15

Ser Gly Leu Thr Tyr Glu Asp Thr Ala Met Tyr Tyr Cys Ala Arg
20 25 30

<210> 55
<211> 34
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T8

<400> 55

Val Ala Tyr Met Leu Glu Pro Thr Val Thr Ala Gly Gly Leu Asp Val
1 5 10 15

Trp Gly Gln Gly Thr Leu Val Thr Val Ser Ser Ala Ser Pro Thr Ser
20 25 30

Pro Lys

<210> 56
<211> 44
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T9

<400> 56

Val Phe Pro Leu Ser Leu Cys Ser Thr Gln Pro Asp Gly Asn Val Val

1 5 10 15

Ile Ala Cys Leu Val Gln Gly Phe Phe Pro Gln Glu Pro Leu Ser Val
20 25 30

Thr Trp Ser Glu Ser Gly Gln Gly Val Thr Ala Arg
35 40

<210> 57
<211> 30
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T10

<400> 57

Asn Phe Pro Pro Ser Gln Asp Ala Ser Gly Asp Leu Tyr Thr Thr Ser
1 5 10 15

Ser Gln Leu Thr Leu Pro Ala Thr Gln Cys Leu Ala Gly Lys
20 25 30

<210> 58
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T11

<400> 58

Ser Val Thr Cys His Val Lys
1 5

<210> 59
<211> 38
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T12

<400> 59

His Tyr Thr Asn Pro Ser Gln Asp Val Thr Val Pro Cys Pro Val Pro
1 5 10 15

Ser Thr Pro Pro Thr Pro Ser Pro Ser Thr Pro Pro Thr Pro Ser Pro
20 25 30

Ser Cys Cys His Pro Arg
35

<210> 60
<211> 27
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T13

<400> 60

Leu Ser Leu His Arg Pro Ala Leu Glu Asp Leu Leu Leu Gly Ser Glu
1 5 10 15

Ala Asn Leu Thr Cys Thr Leu Thr Gly Leu Arg
20 25

<210> 61
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T14

<400> 61

Asp Ala Ser Gly Val Thr Phe Thr Trp Thr Pro Ser Ser Gly Lys
1 5 10 15

<210> 62
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T15

<400> 62

Ser Ala Val Gln Gly Pro Pro Glu Arg
1 5

<210> 63
<211> 23
<212> PRT

<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T16

<400> 63

Asp Leu Cys Gly Cys Tyr Ser Val Ser Ser Val Leu Pro Gly Cys Ala
1 5 10 15

Glu Pro Trp Asn His Gly Lys
20

<210> 64
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T17

<400> 64

Thr Phe Thr Cys Thr Ala Ala Tyr Pro Glu Ser Lys
1 5 10

<210> 65
<211> 9
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T18

<400> 65

Thr Pro Leu Thr Ala Thr Leu Ser Lys
1 5

<210> 66
<211> 32
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T19

<400> 66

Ser Gly Asn Thr Phe Arg Pro Glu Val His Leu Leu Pro Pro Pro Ser
1 5 10 15

Glu Glu Leu Ala Leu Asn Glu Leu Val Thr Leu Thr Cys Leu Ala Arg
20 25 30

<210> 67
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T20

<400> 67

Gly Phe Ser Pro Lys
1 5

<210> 68
<211> 5
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T21

<400> 68

Asp Val Leu Val Arg
1 5

<210> 69
<211> 10
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T22

<400> 69

Trp Leu Gln Gly Ser Gln Glu Leu Pro Arg
1 5 10

<210> 70
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T24

<400> 70

Tyr Leu Thr Trp Ala Ser Arg

1 5

<210> 71
<211> 17
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T25

<400> 71

Gln Glu Pro Ser Gln Gly Thr Thr Thr Phe Ala Val Thr Ser Ile Leu
1 5 10 15

Arg

<210> 72
<211> 7
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T26

<400> 72

Val Ala Ala Glu Asp Trp Lys
1 5

<210> 73
<211> 20
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T28

<400> 73

Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu Pro Leu Ala
1 5 10 15

Phe Thr Gln Lys
20

<210> 74
<211> 4
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T29

<400> 74

Thr Ile Asp Arg
1

<210> 75
<211> 22
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T30

<400> 75

Leu Ala Gly Lys Pro Thr His Val Asn Val Ser Val Val Met Ala Glu
1 5 10 15

Val Asp Gly Thr Cys Tyr
20

<210> 76
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T1-2

<400> 76

Glu Val Gln Leu Val Gln Ser Gly Ala Glu Val Lys Lys Pro Gly Ser
1 5 10 15

Ser Val Lys

<210> 77
<211> 11
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T2-3

<400> 77

Lys Pro Gly Ser Ser Val Lys Val Ser Cys Lys

1 5 10

<210> 78
<211> 19
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T3-4

<400> 78

Val Ser Cys Lys Ala Ser Gly Gly Ser Phe Ser Ser Tyr Ala Ile Asn
1 5 10 15

Trp Val Arg

<210> 79
<211> 21
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T17-18

<400> 79

Thr Phe Thr Cys Thr Ala Ala Tyr Pro Glu Ser Lys Thr Pro Leu Thr
1 5 10 15

Ala Thr Leu Ser Lys
20

<210> 80
<211> 10
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T20-21

<400> 80

Gly Phe Ser Pro Lys Asp Val Leu Val Arg
1 5 10

<210> 81
<211> 15
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T21-22

<400> 81

Asp Val Leu Val Arg Trp Leu Gln Gly Ser Gln Glu Leu Pro Arg
1 5 10 15

<210> 82
<211> 12
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T22-23

<400> 82

Trp Leu Gln Gly Ser Gln Glu Leu Pro Arg Glu Lys
1 5 10

<210> 83
<211> 21
<212> PRT
<213> Artificial sequence

<220>
<223> peptide tryptic fragment H-T27-28

<400> 83

Lys Gly Asp Thr Phe Ser Cys Met Val Gly His Glu Ala Leu Pro Leu
1 5 10 15

Ala Phe Thr Gln Lys
20

<210> 84
<211> 5118
<212> DNA
<213> Artificial sequence

<220>
<223> pDAB3014 sequence

<400> 84
ctggcacgac aggtttcccg actggaaagc gggcagtgag cgcaacgcaa ttaatgtgag 60

ttagctcact cattaggcac cccaggcttt acactttatg cttccggctc gtatgttgtg 120

tggaattgtg agcggataac aatttcacac aggaaacagc tatgaccatg attacgccaa 180

gcttcccggg aatgcggccg ctagctagcg gccgcattcc cgggaagcta gcggccgcat 240

tcccgggaag ctagcggccg cttcccggga agcttgggct gcaggtcaat cccattgctt 300

ttgaagcagc tcaacattga tctctttctc gaggtcattc atatgcttga gaagagagtc 360

gggatagtcc aaaataaaac aaaggtaaga ttacctggtc aaaagtgaaa acatcagtta 420

aaaggtggta taaagtaaaa tatcggtaat aaaaggtggc ccaaagtgaa atttactctt 480

ttctactatt ataaaaattg aggatgtttt tgtcggtact ttgatacgtc atttttgtat 540

gaattggttt ttaagtttat tcgcttttgg aaatgcatat ctgtatttga gtcgggtttt 600

aagttcgttt gcttttgtaa atacagaggg atttgtataa gaaatatctt taaaaaaacc 660

catatgctaa tttgacataa tttttgagaa aaatatatat tcaggcgaat tctcacaatg 720

aacaataata agattaaaat agctttcccc cgttgcagcg catgggtatt ttttctagta 780

aaaataaaag ataaacttag actcaaaaca tttacaaaaa caacccctaa agttcctaaa 840

gcccaaagtg ctatccacga tccatagcaa gcccagccca acccaaccca acccaaccca 900

ccccagtcca gccaactgga caatagtctc cacacccccc cactatcacc gtgagttgtc 960

cgcacgcacc gcacgtctcg cagccaaaaa aaaaaaaaga aagaaaaaaa agaaaaagaa 1020

aaaacagcag gtgggtccgg gtcgtggggg ccggaaacgc gaggaggatc gcgagccagc 1080

gacgaggccg gccctccctc cgcttccaaa gaaacgcccc ccatcgccac tatatacata 1140

ccccccccctc tcctcccatc cccccaaccc taccaccacc accaccacca cctccacctc 1200

ctccccccctc gctgccggac gacgcctccc ccctcccccc ccgccgccgc cgcgccggta 1260

accaccccgc ccctctcctc tttctttctc cgttttttttt ttccgtctcg gtctcgatct 1320

ttggccttgg tagtttgggt gggcgagagg cggcttcgtg cgcgcccaga tcggtgcgcg 1380

ggaggggcgg gatctcgcgg ctggggctct cgccggcgtg gatccggccc ggatctcgcg 1440

gggaatgggg ctctcggatg tagatctgcg atccgccgtt gttgggggag atgatggggg 1500

gtttaaaatt tccgccatgc taaacaagat caggaagagg ggaaaagggc actatggttt 1560

atatttttat atatttctgc tgcttcgtca ggcttagatg tgctagatct ttctttcttc 1620

tttttgtggg tagaatttga atccctcagc attgttcatc ggtagttttt cttttcatga 1680

tttgtgacaa atgcagcctc gtgcggagct tttttgtagg tagaccatgg cttctccgga 1740

gaggagacca gttgagatta ggccagctac agcagctgat atggccgcgg tttgtgatat 1800

cgttaaccat tacattgaga cgtctacagt gaactttagg acagagccac aaacaccaca 1860

agagtggatt gatgatctag agaggttgca agatagatac ccttggttgg ttgctgaggt 1920

tgagggtgtt gtggctggta ttgcttacgc tgggccctgg aaggctagga acgcttacga 1980

ttggacagtt gagagtactg tttacgtgtc acataggcat caaaggttgg gcctaggatc 2040

cacattgtac acacatttgc ttaagtctat ggaggcgcaa ggttttaagt ctgtggttgc 2100

tgttataggc cttccaaacg atccatctgt taggttgcat gaggctttgg gatacacagc 2160

ccggggtaca ttgcgcgcag ctggatacaa gcatggtgga tggcatgatg ttggtttttg 2220

gcaaagggat tttgagttgc cagctcctcc aaggccagtt aggccagtta cccagatctg 2280

aggtaccctg agctcggtcg cagcgtgtgc gtgtccgtcg tacgttctgg ccggccgggc 2340

cttgggcgcg cgatcagaag cgttgcgttg gcgtgtgtgt gcttctggtt tgctttaatt 2400

ttaccaagtt tgtttcaagg tggatcgcgt ggtcaaggcc cgtgtgcttt aaagacccac 2460

cggcactggc agtgagtgtt gctgcttgtg taggctttgg tacgtatggg ctttatttgc 2520

ttctggatgt tgtgtactac ttgggtttgt tgaattatta tgagcagttg cgtattgtaa 2580

ttcagctggg ctacctggac attgttatgt attaataaat gctttgcttt cttctaaaga 2640

tctttaagtg ctgaattcac tggccgtcgt tttacaacgt cgtgactggg aaaaccctgg 2700

cgttacccaa cttaatcgcc ttgcagcaca tccccctttc gccagctggc gtaatagcga 2760

agaggcccgc accgatcgcc cttcccaaca gttgcgcagc ctgaatggcg aatggcgcct 2820

gatgcggtat tttctcctta cgcatctgtg cggtatttca caccgcatat ggtgcactct 2880

cagtacaatc tgctctgatg ccgcatagtt aagccagccc cgacacccgc caacacccgc 2940

tgacgcgccc tgacgggctt gtctgctccc ggcatccgct tacagacaag ctgtgaccgt 3000

ctccgggagc tgcatgtgtc agaggttttc accgtcatca ccgaaacgcg cgagacgaaa 3060

gggcctcgtg atacgcctat ttttataggt taatgtcatg ataataatgg tttcttagac 3120

gtcaggtggc acttttcggg gaaatgtgcg cggaacccct atttgtttat ttttctaaat 3180

acattcaaat atgtatccgc tcatgagaca ataaccctga taaatgcttc aataatattg 3240

aaaaaggaag agtatgagta ttcaacattt ccgtgtcgcc cttattccct tttttgcggc 3300

attttgcctt cctgtttttg ctcacccaga aacgctggtg aaagtaaaag atgctgaaga 3360

tcagttgggt gcacgagtgg gttacatcga actggatctc aacagcggta agatccttga 3420

gagttttcgc cccgaagaac gttttccaat gatgagcact tttaaagttc tgctatgtgg 3480

cgcggtatta tcccgtattg acgccgggca agagcaactc ggtcgccgca tacactattc 3540

tcagaatgac ttggttgagt actcaccagt cacagaaaag catcttacgg atggcatgac 3600

agtaagagaa ttatgcagtg ctgccataac catgagtgat aacactgcgg ccaacttact 3660

tctgacaacg atcggaggac cgaaggagct aaccgctttt ttgcacaaca tgggggatca 3720

tgtaactcgc cttgatcgtt gggaaccgga gctgaatgaa gccataccaa acgacgagcg 3780

tgacaccacg atgcctgtag caatggcaac aacgttgcgc aaactattaa ctggcgaact 3840

acttactcta gcttcccggc aacaattaat agactggatg gaggcggata aagttgcagg 3900

accacttctg cgctcggccc ttccggctgg ctggtttatt gctgataaat ctggagccgg 3960

tgagcgtggg tctcgcggta tcattgcagc actggggcca gatggtaagc cctcccgtat 4020

cgtagttatc tacacgacgg ggagtcaggc aactatggat gaacgaaata gacagatcgc 4080

tgagataggt gcctcactga ttaagcattg gtaactgtca gaccaagttt actcatatat 4140

actttagatt gatttaaaac ttcattttta atttaaaagg atctaggtga agatcctttt 4200

tgataatctc atgaccaaaa tcccttaacg tgagttttcg ttccactgag cgtcagaccc 4260

cgtagaaaag atcaaaggat cttcttgaga tccttttttt ctgcgcgtaa tctgctgctt 4320

gcaaacaaaa aaaccaccgc taccagcggt ggtttgtttg ccggatcaag agctaccaac 4380

tctttttccg aaggtaactg gcttcagcag agcgcagata ccaaatactg ttcttctagt 4440

gtagccgtag ttaggccacc acttcaagaa ctctgtagca ccgcctacat acctcgctct 4500

gctaatcctg ttaccagtgg ctgctgccag tggcgataag tcgtgtctta ccgggttgga 4560

ctcaagacga tagttaccgg ataaggcgca gcggtcgggc tgaacggggg gttcgtgcac 4620

acagcccagc ttggagcgaa cgacctacac cgaactgaga tacctacagc gtgagctatg 4680

agaaagcgcc acgcttcccg aagggagaaa ggcggacagg tatccggtaa gcggcagggt 4740

cggaacagga gagcgcacga gggagcttcc agggggaaac gcctggtatc tttatagtcc 4800

tgtcgggttt cgccacctct gacttgagcg tcgatttttg tgatgctcgt caggggggcg 4860

gagcctatgg aaaaacgcca gcaacgcggc ctttttacgg ttcctggcct tttgctggcc 4920

ttttgctcac atgttctttc ctgcgttatc ccctgattct gtggataacc gtattaccgc 4980

ctttgagtga gctgataccg ctcgccgcag ccgaacgacc gagcgcagcg agtcagtgag 5040

cgaggaagcg tgcgcagcgg aagagcgccc aatacgcaaa ccgcctctcc ccgcgcgttg 5100

gccgattcat taatgcag 5118

<210> 85
<211> 13680
<212> DNA
<213> Artificial sequence

<220>
<223> pDAB8505 sequence

<220>
<221> misc_feature
<222> (1)..(13680)
<223> n = a or c or g or t

<400> 85
tcgcgcgttt cggtgatgac ggtgaaaacc tctgacacat gcagctcccg gagacggtca 60

cagcttgtct gtaagcggat gccgggagca gacaagcccg tcagggcgcg tcagcgggtg 120

ttggcgggtg tcggggctgg cttaactatg cggcatcaga gcagattgta ctgagagtgc 180

accatatgcg gtgtgaaata ccgcacagat gcgtaaggag aaaataccgc atcaggcgcc 240

attcgccatt caggctgcgc aactgttggg aagggcgatc ggtgcgggcc tcttcgctat 300

tacgccagct ggcgaaaggg ggatgtgctg caaggcgatt aagttgggta acgccagggt 360

tttcccagtc acgacgttgt aaaacgacgg ccagtgaatt acaccggtgt gatcatgggc 420

cgcgattaaa aatcccaatt atatttggtc taatttagtt tggtattgag taaaacaaat 480

tcgaaccaaa ccaaaatata aatatatagt ttttatatat atgcctttaa gacttttttat 540

agaattttct ttaaaaaata tctagaaata tttgcgactc ttctggcatg taatatttcg 600

ttaaatatga agtgctccat ttttattaac tttaaataat tggttgtacg atcactttct 660

tatcaagtgt tactaaaatg cgtcaatctc tttgttcttc catattcata tgtcaaaatc 720

tatcaaaatt cttatatatc tttttcgaat ttgaagtgaa atttcgataa tttaaaatta 780

aatagaacat atcattattt aggtatcata ttgattttta tacttaatta ctaaatttgg 840

ttaactttga aagtgtacat caacgaaaaa ttagtcaaac gactaaaata aataaatatc 900

atgtgttatt aagaaaattc tcctataaga atattttaat agatcatatg tttgtaaaaa 960

aaattaattt ttactaacac atatatttac ttatcaaaaa tttgacaaag taagattaaa 1020

ataatattca tctaacaaaa aaaaaaccag aaaatgctga aaacccggca aaaccgaacc 1080

aatccaaacc gatatagttg gtttggtttg attttgatat aaaccgaacc aactcggtcc 1140

atttgcaccc ctaatcataa tagctttaat atttcaagat attattaagt taacgttgtc 1200

aatatcctgg aaattttgca aaatgaatca agcctatatg gctgtaatat gaatttaaaa 1260

gcagctcgat gtggtggtaa tatgtaattt acttgattct aaaaaaatat cccaagtatt 1320

aataatttct gctaggaaga aggttagcta cgatttacag caaagccaga atacaaagaa 1380

ccataaagtg attgaagctc gaaatatacg aaggaacaaa tatttttaaa aaaatacgca 1440

atgacttgga acaaaagaaa gtgatatatt ttttgttctt aaacaagcat cccctctaaa 1500

gaatggcagt tttcctttgc atgtaactat tatgctccct tcgttacaaa aattttggac 1560

tactattggg aacttcttct gaaaatagtg gccaccgctt aattaaggcg cgccatgccc 1620

ggccgcattc ccgggaagct aggccaccgt ggcccgcctg caggggaagc ttagctgaaa 1680

caacccggcc ctaaagcact atcgtatcac ctatctgaaa taagtcacgg gtttcgaacg 1740

tccacttgcg tcgcacggaa ttgcatgttt cttgttggaa gcatattcac gcaatctcca 1800

cacataaagg tttatgtata aacttacatt tagctcagtt taattacagt cttatttgga 1860

tgcatatgta tggttctcaa tccatataag ttagagtaaa aaataagttt aaattttatc 1920

ttaattcact ccaacatata tggattgagt acaatactca tgtgcatcca aacaaactac 1980

ttatattgag gtgaatttgg atagaaatta aactaactta cacactaagc caatctttac 2040

tatattaaag caccagtttc aacgatcgtc ccgcgtcaat attattaaaa aactcctaca 2100

tttctttata atcaacccgc actcttataa tctcttctct actactataa taagagagtt 2160

tatgtacaaa ataaggtgaa attatgtata agtgttctgg atattggttg ttggctccat 2220

attcacacaa cctaatcaat agaaaacata tgttttatta aaacaaaatt tatcatatat 2280

catatatata tatatacata tatatatata tatatataaa ccgtagcaat gcacgggcat 2340

ataactagtg caacttaata catgtgtgta ttaagatgaa taagagggta tccaaataaa 2400

aaacttgttc gcttacgtct ggatcgaaag gggttggaaa cgattaaatc tcttcctagt 2460

caaaattgaa tagaaggaga tttaatctct cccaatcccc ttcgatcatc caggtgcaac 2520

cgtataagtc ctaaagtggt gaggaacacg aaacaaccat gcattggcat gtaaagctcc 2580

aagaatttgt tgtatcctta acaactcaca gaacatcaac caaaattgca cgtcaagggt 2640

attgggtaag aaacaatcaa acaaatcctc tctgtgtgca aagaaacacg gtgagtcatg 2700

ccgagatcat actcatctga tatacatgct tacagctcac aagacattac aaacaactca 2760

tattgcatta caaagatcgt ttcatgaaaa ataaaatagg ccggacagga caaaaatcct 2820

tgacgtgtaa agtaaattta caacaaaaaa aaagccatat gtcaagctaa atctaattcg 2880

ttttacgtag atcaacaacc tgtagaaggc aacaaaactg agccacgcag aagtacagaa 2940

tgattccaga tgaaccatcg acgtgctacg taaagagagt gacgagtcat atacatttgg 3000

caagaaacca tgaagctgcc tacagccgtc tcggtggcat agaacacaag aaattgtgtt 3060

aattaatcaa agctataaat aacgctcgca tgcctgtgca cttctccatc accaccactg 3120

ggtcttcaga ccattagctt tatctactcc agagcgcaga agaacccgat cgacaccatg 3180

ggatggagct ggatctttct cttcctcctg tcaggagctg caggtgtcca ttgccaggtt 3240

cagctcgtgc agtcaggtgc tgaggtgaag aagcctggct cctcggtgaa ggtctcctgc 3300

aaggcttctg gaggttcctt cagctcctat gctatcaact gggtgaggca agctcctgga 3360

caagggcttg agtggatggg agggctcatg cctatctttg ggacaacaaa ctacgcgcag 3420

aagttccagg acaggctcac gattaccgcg gacgtatcca cgagtacagc ctacatgcaa 3480

ctgagcggcc tgacatatga agacacggcc atgtattact gtgcgagagt tgcctacatg 3540

cttgaaccta ccgtcactgc aggtggtttg gacgtctggg gccaagggac cttggtcacc 3600

gtctcctccg catccccgac cagcccgaag gtcttcccgc tgagcctctg tagcacccag 3660

ccagatggga acgtggtcat cgcctgcctg gtccagggct tcttccctca ggagccactc 3720

agtgtgacct ggagcgaaag cggacagggc gtgaccgcca ggaacttccc acccagccag 3780

gatgcctccg gagacctgta caccacgtcc agccagctga cccttccggc cacacagtgc 3840

ctagcgggca agtccgtgac atgccacgtg aagcactaca cgaatcccag ccaggatgtg 3900

actgtgccct gcccagttcc ctcaactcca cctaccccat ctccctcgac tccacctacc 3960

ccatctccct catgctgcca ccccaggctg tcactgcaca ggcctgccct cgaggacctg 4020

ctcttaggtt cggaagcgaa cctcacgtgc acactcaccg gcctgagaga tgcgtcaggt 4080

gtcaccttca cctggacgcc ctcaagtggt aagagcgctg ttcaaggccc acctgagcgt 4140

gacctctgtg gctgctacag cgtgtccagt gtccttccgg gctgtgccga gccttggaat 4200

catgggaaga ccttcacttg cactgctgcc taccccgaga gcaagacccc gctaaccgcc 4260

accctctcga aatccggcaa cacattccgg cccgaggtcc acctgctgcc gccgccgtcg 4320

gaggagctgg ccctgaacga gctggtgacg ctgacgtgcc tggcgcgcgg cttcagcccc 4380

aaggacgtgc tggttcgctg gctgcagggc tcacaggagc tgcctaggga gaagtacctg 4440

acttgggcat cccggcagga gcccagccaa ggcaccacca ccttcgctgt gacctcgata 4500

ctgcgcgtgg cagccgagga ctggaagaag ggtgacacct tctcctgcat ggtgggccac 4560

gaggcccttc cgctggcctt cacacagaag accatcgacc gcttggcggg taaacccacc 4620

catgtcaatg tgtctgttgt catggcggag gtggacggca cctgctactg agagctcgct 4680

gagggcactg aagtcgcttg atgtgctgaa ttgtttgtga tgttggtggc gtattttgtt 4740

taaataagta agcatggctg tgattttatc atatgatcga tctttggggt tttatttaac 4800

acattgtaaa atgtgtatct attaataact caatgtataa gatgtgttca ttcttcggtt 4860

gccatagatc tgcttatttg acctgtgatg ttttgactcc aaaaaccaaa atcacaactc 4920

aataaactca tggaatatgt ccacctgttt cttgaagagt tcatctacca ttccagttgg 4980

catttatcag tgttgcagcg gcgctgtgct ttgtaacata acaattgtta cggcatatat 5040

ccaacggccg gcctagctag gccacggtgg ccagatccac tagttctaga gcggccgggc 5100

aagcggccgc attcccggga agctaggcca ccgtggcccg cctgcagggg aagcttagct 5160

gaaacaaccc ggccctaaag cactatcgta tcacctatct gaaataagtc acgggtttcg 5220

aacgtccact tgcgtcgcac ggaattgcat gtttcttgtt ggaagcatat tcacgcaatc 5280

tccacacata aaggtttatg tataaactta catttagctc agtttaatta cagtcttatt 5340

tggatgcata tgtatggttc tcaatccata taagttagag taaaaaataa gtttaaattt 5400

tatcttaatt cactccaaca tatatggatt gagtacaata ctcatgtgca tccaaacaaa 5460

ctacttatat tgaggtgaat ttggatagaa attaaactaa cttacacact aagccaatct 5520

ttactatatt aaagcaccag tttcaacgat cgtcccgcgt caatattatt aaaaaactcc 5580

tacatttctt tataatcaac ccgcactctt ataatctctt ctctactact ataataagag 5640

agtttatgta caaaataagg tgaaattatg tataagtgtt ctggatattg gttgttggct 5700

ccatattcac acaacctaat caatagaaaa catatgtttt attaaaacaa aatttatcat 5760

atatcatata tatatatata catatatata tatatatata taaaccgtag caatgcacgg 5820

gcatataact agtgcaactt aatacatgtg tgtattaaga tgaataagag ggtatccaaa 5880

taaaaaactt gttcgcttac gtctggatcg aaaggggttg gaaacgatta aatctcttcc 5940

tagtcaaaat tgaatagaag gagatttaat ctctcccaat ccccttcgat catccaggtg 6000

caaccgtata agtcctaaag tggtgaggaa cacgaaacaa ccatgcattg gcatgtaaag 6060

ctccaagaat ttgttgtatc cttaacaact cacagaacat caaccaaaat tgcacgtcaa 6120

gggtattggg taagaaacaa tcaaacaaat cctctctgtg tgcaaagaaa cacggtgagt 6180

catgccgaga tcatactcat ctgatataca tgcttacagc tcacaagaca ttacaaacaa 6240

ctcatattgc attacaaaga tcgtttcatg aaaaataaaa taggccggac aggacaaaaa 6300

tccttgacgt gtaaagtaaa tttacaacaa aaaaaaagcc atatgtcaag ctaaatctaa 6360

ttcgttttac gtagatcaac aacctgtaga aggcaacaaa actgagccac gcagaagtac 6420

agaatgattc cagatgaacc atcgacgtgc tacgtaaaga gagtgacgag tcatatacat 6480

ttggcaagaa accatgaagc tgcctacagc cgtctcggtg gcatagaaca caagaaattg 6540

tgttaattaa tcaaagctat aaataacgct cgcatgcctg tgcacttctc catcaccacc 6600

actgggtctt cagaccatta gctttatcta ctccagagcg cagaagaacc cgatcgacac 6660

catgggatgg tcctggatct ttctcttcct tctgtcagga gctgcaggtg tccactgcga 6720

gatcgtgctc acgcagtctc caggcaccct gtctttgtcg ccaggggaac gtgccaccct 6780

ctcctgccgg gccagtcagt ccgtttccag cgcgtacctt gcctggtacc agcagaagcc 6840

tggccaagct cccaggctcc tcatctatgg tgcgtccagc agggctactg gcattccaga 6900

ccgcttctca ggcagtgggt ctgggacaga cttcacgctc accattagca ggctggaacc 6960

tgaggatttt gcagtgtact actgtcagca gtatggtcgc tcacccacgt tcggccaggg 7020

gaccaaggtg gagatcaagc gcactgtggc tgcaccgtcg gtcttcatat tcccgccatc 7080

cgatgagcag ctgaagtctg gcactgcctc tgttgtgtgc ctgctgaata acttctatcc 7140

gagagaggcg aaggtacagt ggaaggtgga taacgccctc caatcgggta actcccaaga 7200

gtccgttaca gagcaggaca gcaaggacag cacctacagc ctcagcaaca ccttgacgct 7260

gagcaaagcg gactacgaga aacacaaggt ctacgcctgc gaagtcaccc atcaaggcct 7320

gcgctcgccc gtcacaaaga gcttcaaccg gggagagtgt tgagagctcg ctgagggcac 7380

tgaagtcgct tgatgtgctg aattgtttgt gatgttggtg gcgtattttg tttaaataag 7440

taagcatggc tgtgatttta tcatatgatc gatctttggg gttttattta acacattgta 7500

aaatgtgtat ctattaataa ctcaatgtat aagatgtgtt cattcttcgg ttgccataga 7560

tctgcttatt tgacctgtga tgttttgact ccaaaaacca aaatcacaac tcaataaact 7620

catggaatat gtccacctgt ttcttgaaga gttcatctac cattccagtt ggcatttatc 7680

agtgttgcag cggcgctgtg ctttgtaaca taacaattgt tacggcatat atccaacggc 7740

cggcctagct aggccacggt ggccagatcc actagttcta gagcggccgc ttaattaaat 7800

ttaaatgttt aaactaggaa atccaagctt gggctgcagg tcaatcccat tgcttttgaa 7860

gcagctcaac attgatctct ttctcgaggt cattcatatg cttgagaaga gagtcgggat 7920

agtccaaaat aaaacaaagg taagattacc tggtcaaaag tgaaaacatc agttaaaagg 7980

tggtataagt aaaatatcgg taataaaagg tggcccaaag tgaaatttac tcttttctac 8040

tattataaaa attgaggatg ttttgtcggt actttgatac gtcatttttg tatgaattgg 8100

tttttaagtt tattcgcgat tttggaaatg catatctgta tttgagtcgg gttttaagtt 8160

cgtttgcttt tgtaaataca gagggatttg tataagaaat atctttaaaa aaaccatatg 8220

ctaatttgac ataatttttg agaaaaatat atattcaggc gaattctcac aatgaacaat 8280

aataagatta aaatagcttg cccccgttgc agcgatgggt atttttttcta gtaaaataaa 8340

agataaactt agactcaaaa catttacaaa aacaacccct aaagtcctaa agcccaaagt 8400

gctatgcacg atccatagca agcccagccc aacccaaccc aacccaaccc accccagtgc 8460

agccaactgg caaatagtct ccacaccccg gcactatcac cgtgagttgt ccgcaccacc 8520

gcacgtctcg cagccaaaaa aaaaaaaaga aagaaaaaaa agaaaaagaa aaaacagcag 8580

gtgggtccgg gtcgtggggg ccggaaaagc gaggaggatc gcgagcagcg acgaggccgg 8640

ccctccctcc gcttccaaag aaacgccccc catcgccact atatacatac ccccccctct 8700

cctcccatcc ccccaaccct accaccacca ccaccaccac ctcctccccc ctcgctgccg 8760

gacgacgcct ccccccctccc cctccgccgc cgccggtaac caccccgccc ctctcctctt 8820

tctttctccg ttttttttttt cgtctcggtc tcgatctttg gccttggtag tttgggtggg 8880

cgagagcggc ttcgtcgccc agatcggtgc gcgggagggg cgggatctcg cggctggcgt 8940

ctccgggcgt gagtcggccc ggatcctcgc ggggaatggg gctctcggat gtagatctgc 9000

gatccgccgt tgttggggga gatgatgggg ggtttaaaat ttccgccatg ctaaacaaga 9060

tcaggaagag gggaaaaggg cactatggtt tatattttta tatatttctg ctgcttcgtc 9120

aggcttagat gtgctagatc ttctttcttt cttctttttg tgggtagaat ttgaatccct 9180

cagcattgtt catcggtagt ttttcttttc atgatttgtg acaaatgcag cctcgtgcgg 9240

agctttttttg taggtagacc atggcttctc cggagaggag accagttgag attaggccag 9300

ctacagcagc tgatatggcc gcggtttgtg atatcgttaa ccattacatt gagacgtcta 9360

cagtgaactt taggacagag ccacaaacac cacaagagtg gattgatgat ctagagaggt 9420

tgcaagatag ataccttgg ttggttgctg aggttgaggg tgttgtggct ggtattgctt 9480

acgctgggcc ctggaaggct aggaacgctt acgattggac agttgagagt actgtttacg 9540

tgtcacatag gcatcaaagg ttgggcctag gatccacatt gtacacacat ttgcttaagt 9600

ctatggaggc gcaaggtttt aagtctgtgg ttgctgttat aggccttcca aacgatccat 9660

ctgttaggtt gcatgaggct ttgggataca cagcccgggg tacattgcgc gcagctggat 9720

acaagcatgg tggatggcat gatgttggtt tttggcaaag ggattttgag ttgccagctc 9780

ctccaaggcc agttaggcca gttacccaga tctgaggtac caatgagctc ggtcgcagcg 9840

tgtgcgtgtc cgtcgtacgt tctggccggc cgggccttgg gcgcgcgatc agaancgttg 9900

cgttggcgtg tgtgtgcttc tggtttgctt taattttacc aagtttgttt caaggtggat 9960

cgcgtggtca aggcccgtgt gctttaaana cccaccggca ctggcagtga gtgttgctgc 10020

ttgtgtaggc tttggtacgt atgggcttta tttgcttctg gatgttgtgt actacttggg 10080

tttgttgaat tattatganc agttgcgtat tgtaattcag ctgggctacc tggacattgt 10140

tatgtattaa taaatgcttt gctttcttct aaagatcttt aagtgctgaa ttcatatttc 10200

ctcctgcagg gtttaaactt gccgtggcct attttcagaa gaagttccca atagtagtcc 10260

aaaatttttg taacgaaggg agcataatag ttacatgcaa aggaaaactg ccattcttta 10320

gaggggatgc ttgtttaaga acaaaaaata tatcactttc ttttgttcca agtcattgcg 10380

tatttttta aaaatatttg ttccttcgta tatttcgagc ttcaatcact ttatggttct 10440

ttgtattctg gctttgctgt aaatcgtagc taaccttctt cctagcagaa attattaata 10500

cttgggatat ttttttagaa tcaagtaaat tacatattac caccacatcg agctgctttt 10560

aaattcatat tacagccata taggcttgat tcattttgca aaatttccag gatattgaca 10620

acgttaactt aataatatct tgaaatatta aagctattat gattaggggt gcaaatggac 10680

cgagttggtt cggtttatat caaaatcaaa ccaaaccaac tatatcggtt tggattggtt 10740

cggttttgcc gggttttcag cattttctgg ttttttttt gttagatgaa tattatttta 10800

atcttacttt gtcaaatttt tgataagtaa atatatgtgt tagtaaaaat taatttttt 10860

tacaaacata tgatctatta aaatattctt ataggagaat tttcttaata acacatgata 10920

tttatttatt ttagtcgttt gactaatttt tcgttgatgt acactttcaa agttaaccaa 10980

atttagtaat taagtataaa aatcaatatg atacctaaat aatgatatgt tctatttaat 11040

tttaaattat cgaaatttca cttcaaattc gaaaaagata tataagaatt ttgatagatt 11100

ttgacatatg aatatggaag aacaaagaga ttgacgcatt ttagtaacac ttgataagaa 11160

agtgatcgta caaccaatta tttaaagtta ataaaaatgg agcacttcat atttaacgaa 11220

atattacatg ccagaagagt cgcaaatatt tctagatatt ttttaaagaa aattctataa 11280

aaagtcttaa aggcatatat ataaaaacta tatatttata ttttggtttg gttcgaattt 11340

gttttactca ataccaaact aaattagacc aaatataatt gggatttta atcgcggccc 11400

actagtcacc ggtgtgcttg gcgtaatcat ggtcatagct gtttcctgtg tgaaattgtt 11460

atccgctcac aattccacac aacatacgag ccggaagcat aaagtgtaaa gcctggggtg 11520

cctaatgagt gagctaactc acattaattg cgttgcgctc actgcccgct ttccagtcgg 11580

gaaacctgtc gtgccagctg cattaatgaa tcggccaacg cgcggggaga ggcggtttgc 11640

gtattgggcg ctcttccgct gcgcacgctg cgcacgctgc gcacgcttcc tcgctcactg 11700

actcgctgcg ctcggtcgtt cggctgcggc gagcggtatc agctcactca aaggcggtaa 11760

tacggttatc cacagaatca ggggataacg caggaaagaa catgtgagca aaaggccagc 11820

aaaaggccag gaaccgtaaa aaggccgcgt tgctggcgtt tttccatagg ctccgccccc 11880

ctgacgagca tcacaaaaat cgacgctcaa gtcagaggtg gcgaaacccg acaggactat 11940

aaagatacca ggcgtttccc cctggaagct ccctcgtgcg ctctcctgtt ccgaccctgc 12000

cgcttaccgg atacctgtcc gcctttctcc cttcgggaag cgtggcgctt tctcatagct 12060

cacgctgtag gtatctcagt tcggtgtagg tcgttcgctc caagctgggc tgtgtgcacg 12120

aacccccccgt tcagcccgac cgctgcgcct tatccggtaa ctatcgtctt gagtccaacc 12180

cggtaagaca cgacttatcg ccactggcag cagccactgg taacaggatt agcagagcga 12240

ggtatgtagg cggtgctaca gagttcttga agtggtggcc taactacggc tacactagaa 12300

ggacagtatt tggtatctgc gctctgctga agccagttac cttcggaaaa agagttggta 12360

gctcttgatc cggcaaacaa accaccgctg gtagcggtgg ttttttttgtt tgcaagcagc 12420

agattacgcg cagaaaaaaa ggatctcaag aagatccttt gatcttttct acggggtctg 12480

acgctcagtg gaacgaaaac tcacgttaag ggattttggt catgagatta tcaaaaagga 12540

tcttcaccta gatcctttta aattaaaaat gaagttttaa atcaatctaa agtatatatg 12600

agtaaacttg gtctgacagt taccaatgct taatcagtga ggcacctatc tcagcgatct 12660

gtctatttcg ttcatccata gttgcctgac tccccgtcgt gtagataact acgatacggg 12720

agggcttacc atctggcccc agtgctgcaa tgataccgcg agacccacgc tcaccggctc 12780

cagatttatc agcaataaac cagccagccg gaagggccga gcgcagaagt ggtcctgcaa 12840

ctttatccgc ctccatccag tctattaatt gttgccggga agctagagta agtagttcgc 12900

cagttaatag tttgcgcaac gttgttgcca ttgctacagg catcgtggtg tcacgctcgt 12960

cgtttggtat ggcttcattc agctccggtt cccaacgatc aaggcgagtt acatgatccc 13020

ccatgttgtg caaaaaagcg gttagctcct tcggtcctcc gatcgttgtc agaagtaagt 13080

tggccgcagt gttatcactc atggttatgg cagcactgca taattctctt actgtcatgc 13140

catccgtaag atgcttttct gtgactggtg agtactcaac caagtcattc tgagaatagt 13200

gtatgcggcg accgagttgc tcttgcccgg cgtcaatacg ggataatacc gcgccacata 13260

gcagaacttt aaaagtgctc atcattggaa aacgttcttc ggggcgaaaa ctctcaagga 13320

tcttaccgct gttgagatcc agttcgatgt aacccactcg tgcacccaac tgatcttcag 13380

catcttttac tttcaccagc gtttctgggt gagcaaaaac aggaaggcaa aatgccgcaa 13440

aaaagggaat aagggcgaca cggaaatgtt gaatactcat actcttcctt tttcaatatt 13500

attgaagcat ttatcagggt tattgtctca tgagcggata catatttgaa tgtatttaga 13560

aaaataaaca aataggggtt ccgcgcacat ttccccgaaa agtgccacct gacgtctaag 13620

aaaccattat tatcatgaca ttaacctata aaaataggcg tatcacgagg ccctttcgtc 13680